

DIVISION III – ROADWAY CONSTRUCTION

SPECIAL PROVISION COPIED NOTES (SPCNs), SPECIAL PROVISION (SPs) and SUPPLEMENTAL SPECIFICATIONS (SSs)

VDOT web file users (“pdf”) may obtain more information and other resources by downloading the accompanying “zip” file (compressed WORD® files).

<http://www.virginiadot.org/business/resources/const/07ImpRev.zip>

These sheets may also be found at the following locations:

Global Web Access: <http://www.virginiadot.org/business/const/spec-default.asp>

VDOT Only Access: http://insidevdot/sites/SanC/specs/2007specs/2007_Standard_Specifications/Forms/AllItems.aspx

TABLE OF CONTENTS

STANDARD 300 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)	3-1
(c302h00) SECTION 302.03(b) PRECAST DRAINAGE STRUCTURES 1-14-08 (SPCN)	3-2
(c303kg0) AGGREGATE MATERIAL Re. 7-08c (SPCN)	3-2
CNSP SELECT USE 300 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)	3-3
SECTION 315—ASPHALT CONCRETE PAVEMENT (Rideability) 1-25-10a (SPCN)	3-4
STANDARD 300 SERIES SPs (SPECIAL PROVISIONS)	3-5
S302B00 - RESTORING EXISTING PAVEMENT 1-14-08c	3-6
S302G01 - FLOWABLE BACKFILL 7-30-08c	3-9
S302H01 - TEMPORARY VEHICULAR WATERCOURSE CROSSING 3-25-09	3-11
S303DP0 - NO PLAN AND MINIMUM PLAN CONCEPT Re. 7-08c	3-13
S303J00 - TURBIDITY CURTAIN 1-14-08c	3-15

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

S305BM0 - STABILIZED AND PAVED SHOULDER OVERLAY	8-2-07c	3-17
S305CM0 - SHOULDER REHABILITATION	8-23-07c	3-20
S305DM0 - SHOULDER RESTORATION FOR GUARDRAIL WORK	8-23-07	3-23
S310AM1 - NONTRACKING TACK COAT	10-7-09	3-26
S312CM0 - BLOTTED SEAL COATS	8-22-08c	3-28
S312DM1 - EMULSIFIED ASPHALT SLURRY SEAL	11-2-09	3-30
S312EM1 - LATEX MOD. EMULSION TREATMENT (MICRO-SURFACING)	11-2-09	3-35
S314CM1 - ASPHALT SURFACE TREATMENT	11-6-09	3-41
S314DM1 - MACRO-TEXTURE SURFACE TREATMENT	11-6-09	3-47
S315LM0 - SURFACE PREPARATION & RESTORATION PRIOR TO OVERLAY	10-23-08	3-52
S315MM0 - SEALING CRACKS IN ASP. CONC. PAVE. PRIOR TO OVERLAY	10-2-08	3-54
S315NM0 - PLACEMENT OF HOT MIX ASPHALT OVERLAYS (Asphalt Maintenance)	10-21-08c	3-57
S315OM0 - TRENCH WIDENING ASPHALT MIXTURES BM-25.0(T), IM-19.0D(T) or IM19.0A(T)	10-17-08c	3-60
S315QM0 - LIMITS OF MAINLINE OVERLAY AT INTERSECTIONS TO PAVED ROADS	10-21-08c	3-62
S315R00 - RIDEABILITY	10-26-09	3-64
S316B00 - RIDEABILITY FOR HYDRAULIC CEMENT CONC. PAVE.	Re.7-08c	3-67
S316D00 - SEALING SHOULDER JOINTS	Re. 7-08c	3-69
—CNSP SELECT USE 300 SERIES SPs (SPECIAL PROVISIONS)—		3-70
MODIFIED. AGGREGATE SHOULDER MATERIAL (Loudoun Co. Only)	10-2-08a	3-71
SEAL CRACKS IN ACP OR HCCP (TYPE A OR B BEFORE OVERLAY)	5-8-09ac	3-72
SAW & SEAL JOINTS IN ASPHALT OVERLAYS OVER JOINTED CONC. PAVE.	10-31-08a	3-75
—STANDARD 300 SERIES SSs (SUPPLEMENTAL SPECIFICATIONS)—		3-78
SS30201 - SUPP. SEC. 302—DRAINAGE STRUCTURES	11-16-09	3-79
SS30304 - SUPP. SEC. 303—EARTHWORK	1-25-10	3-86
SS30601 - SUPP. SEC. 306—LIME STABILIZATION	10-2-08	3-89
SS31504 - SUPP. SEC. 315—ASPHALT CONCRETE PAVEMENT	12-3-09	3-92

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

SS31601 - SUPP. SEC. 316—HYDRAULIC CEMENT CONCRETE PAVEMENT	2-24-09.....3-98
SS31702 - SUPP. SEC. 317—STONE MATRIX ASPHALT CONCRETE PAVEMENT	9-21-09.....3-99

1-
2-
3-

——STANDARD 300 SERIES SPCNs (SPECIAL PROVISION COPIED NOTES)——

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES — PROJECTS REQUIRING DRAINAGE ITEMS (END SECTION, EW-12, DROP INLET, JUNCTION BOX-TYPE A).

(c302h00-0708) **SECTION 302.03(b) PRECAST DRAINAGE STRUCTURES** of the Specifications is amended to include the following:

Precast units, excluding concrete pipe, prestressed concrete items and soundwalls, conforming to the requirements herein will only be accepted under a Quality Control/Quality Acceptance Program (QC/QA). The Contractor shall have the producer perform quality control functions in accordance with a Department approved QC/QA plan. Each piece, manufactured under the QC/QA program, in addition to the date and other required markings, shall be stamped with the letters (QC), as evidence that the required QC/QA procedures have been performed. Each shipping document shall be affixed with the following:

We certify that these materials have been tested and conform to VDOT Precast Concrete Products Quality Assurance Program

Signature and Title

1-14-08 (SPCN)

GUIDELINES — USE WHEN REQUESTED BY THE DESIGNER (NOT FOR USE IN PAVEMENT STRUCTURE AND RARELY USED IN BEDDING MATERIAL).

(c303kg0-0708) **AGGREGATE MATERIAL** shall be the size specified conforming to Section 203 of the Specifications. The aggregate shall be placed at locations shown on the plans or as directed by the Engineer. Aggregate material will be measured in units of tons for the size specified in accordance with Section 109 of the Specifications. Payment will be made at the contract unit price per ton, which bid price shall be full compensation for furnishing, placing, and shaping and compaction, if required.

Payment will be made under:

Pay Item	Pay Unit
Aggregate Material (Size)	Ton

5-23-95c, Reissued 7-2008c (SPCN)

——**SELECT USE 300 SERIES SPECIAL PROVISION COPIED NOTES (SPCNs)**——

The following are Select Use Special Provision Copied Notes. None have been through the Department's complete Specifications Committee review/comment/acceptance process and are not part of the Standard Specifications. They are to be considered as project-specific and may be subject to modifications required to meet specific project conditions or requirements for Federal funding. Anyone making modifications is responsible for obtaining the appropriate expertise in the discipline applicable to the modification. If modifications are made the date must also be changed to reflect the current date. Please send a copy of the modified special provision copied note with the new date and specific project number to David.Gayle@VDOT.Virginia.gov so it may be added to the Specifications Stockpile.

cu315000a Thin Hot Mix (THMACO) Rideability

GUIDELINES – ASPHALT MAINTENANCE PROJECTS WHERE “THIN HOT MIX ASPHALT CONCRETE OVERLAY IS USED” AND “RIDEABILITY” APPLIES (PLANT MIX ONLY).

SECTION 315—ASPHALT CONCRETE PAVEMENT - The Special Provision for Rideability is amended to include the following:

This project will be subject to the Special Provision for **RIDEABILITY** except that Rideability will not be waived as a result of AC layer thickness and the **THIN HOT MIX ASPHALT CONCRETE OVERLAY** will not be considered a “scratch course.”

1-25-10a (SPCN)

——STANDARD 300 SERIES SPs (SPECIAL PROVISIONS)——

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES — FOR PROJECTS THAT ALLOW EXISTING PAVEMENT TO BE OPEN CUT. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21103 SuperPave -Asphalt Concrete, SS31504 SuperPave -Asphalt Conc Pave or SS21402 Hydraulic Cement, SS21501 Hydraul Cement Conc Admixtures, SS21702 Hydraulic Cement Concrete, or S312CM0 Blotted Seal Coats or S314CM1 Asphalt Surface Treatment.

S302B00-0708

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RESTORING EXISTING PAVEMENT**

January 14, 2008c

I. DESCRIPTION

This work shall consist of restoring existing pavement, removed for installation or repair of utilities such as, but not limited to pipe culverts, conduits, water and sanitary sewer items.

II. MATERIALS

Asphalt Concrete shall conform to the requirements of Section 211 of the Specifications.

Aggregate Subbase material shall conform to the requirements of Section 208 of the Specifications.

Asphalt Material shall conform to the requirements of Section 210 of the Specifications.

Fine Aggregate shall conform to the requirements of Section 202 of the Specifications.

Coarse Aggregate for surface treatment shall conform to the requirements of Section 203 of the Specifications.

Hydraulic Cement Concrete Class A3 shall conform to the requirements of Section 217 of the Specifications.

Steel Reinforcement shall conform to the requirements of Section 223 of the Specifications.

III. PROCEDURES

Pavement restoration shall be in accordance with this Provision and plan notes.

Backfill shall be in accordance with Section 302.03(a)2.g. of the Specifications.

Asphalt Concrete shall be placed and compacted in accordance with Section 315 of the Specifications.

Surface Treatment shall be placed in accordance with the Asphalt Surface Treatment special provision and the attached drawing.

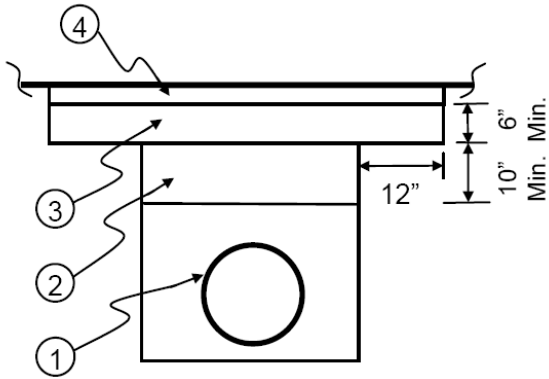
Concrete Pavement shall be placed in accordance with Section 509 of the Specifications and this special provision. Open trench in Hydraulic Cement Concrete Pavement should be located at existing transverse joints if at all possible. If concrete pavement is removed within two feet of an existing transverse joint, pavement removal shall be extended two feet beyond the joint. Reinforcing steel and dowels shall be installed in accordance with Road and Bridge Standard PR-2. Joint replacement shall be in accordance with Road and Bridge Standard PR-2.

IV. MEASUREMENT AND PAYMENT

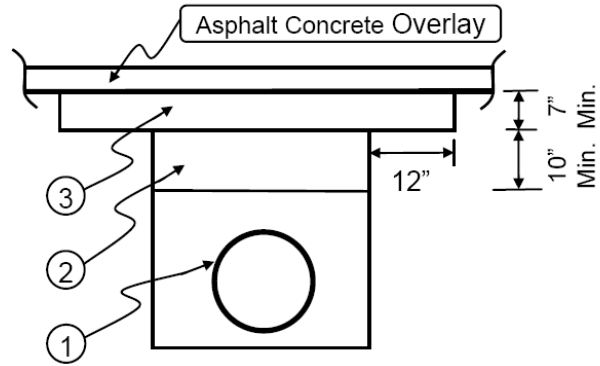
*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

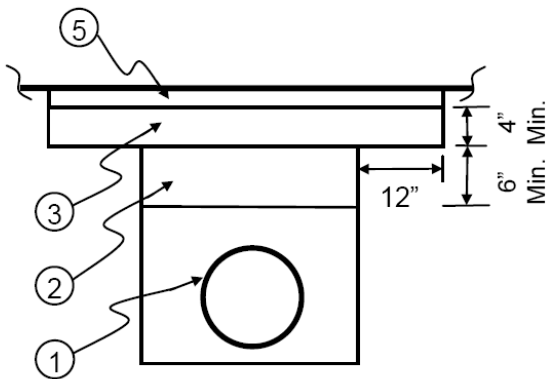
Restoring Existing Pavement unless otherwise specified will not be measured for separate payment, the cost thereof shall be included in the price bid for the utility to which it pertains in accordance with Section 302.04, Section 520.06 or Section 705.04 of the Specifications, as appropriate. However, widths and depths in excess of the attached drawing that are authorized or directed by the Engineer will be paid for in accordance with Section 109.05 of the Specifications.



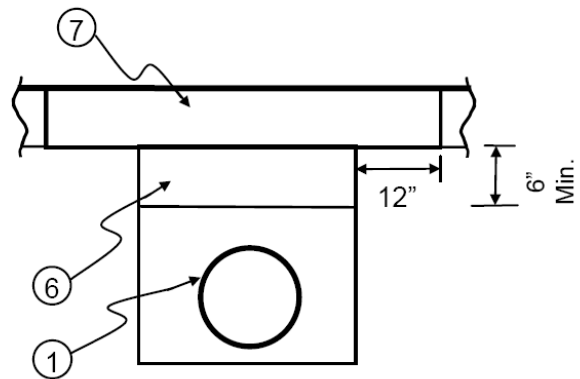
PAVEMENT STRUCTURE
Asphalt Conc. Base and Surface



PAVEMENT STRUCTURE
Scheduled for Asphalt Conc. Overlay



PAVEMENT STRUCTURE
Aggregate Base and Surface Treatment



PAVEMENT STRUCTURE
Hydraulic Cement Concrete

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

NOTES:

The following methods for restoring existing pavement shall be adhered to unless otherwise specified on the plans.

1. Pipe culverts, conduits and utility items shall be installed in accordance with the applicable Road and Bridge Standards and Specifications.
2. Subbase - Aggregate material Type 1, Size 21A or 21B.
3. Asphalt Concrete Type BM-25.0
4. Surface - Asphalt Concrete Type SM-9.5D @ 165 lbs. per sq. yd.
5. Surface - Blotted Seal Coat Type C: The initial seal and final seal shall be CRS-2, CMA-2 or CMS-2h liquid asphalt material @ 0.17 gal./sq. yd. with 15 lbs. of No. 8P stone/sq. yd. each. The blot seal shall be CRS-2, CMS-2 or CMS-2h liquid asphalt material @ 0.15 gal./sq. yd. with 10 lbs. of fine aggregate grade B sand per sq. yd.
6. Subbase - Aggregate material Type 1 Size 21B
7. Surface - Hydraulic Cement Concrete, high early strength, matching existing structure for depth and surface texture.

GUIDELINES — PROJECTS REQUIRING CULVERTS OR UNDERGROUND UTILITIES. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21402 Hydraulic Cement, SS21501 Hydraul Cement Conc Admixtures, SS21702 Hydraulic Cement Concrete.

S302G01-0908

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
FLOWABLE BACKFILL

July 30, 2008c

I. DESCRIPTION

This work shall consist of furnishing and placing flowable backfill for use as backfill material in pipe installations or in other uses at locations as designated on the plans, and as backfill material for plugging designated abandoned pipes and culverts.

II. MATERIALS

Hydraulic Cement shall conform to the requirements of Section 214 of the Specifications.

Fly Ash shall have no specific requirement for fineness, loss of ignition, or reactivity.

Water shall conform to the requirements of Section 216 of the Specifications.

Aggregates shall conform to the requirements of Sections 202 and 203 of the Specifications with a combined gradation as determined by the Contractor.

Admixtures shall conform to the requirements of Section 215 of the Specifications.

Granulated Iron Blast Furnace Slag shall conform to the requirements of Section 215 of the Specifications.

III. MIX DESIGN

Mix design for flowable backfill shall be provided by the Contractor. When used as backfill material in pipe installations or in other uses at locations as designated on the plans flowable backfill shall have a design compressive strength of 30 to 200 pounds per square inch. When used as backfill material for plugging designated abandoned pipes and culverts flowable backfill shall have a design compressive strength of 30 to 1200 pounds per square inch. The design compressive strength requirement shall be at 28 days when tested in accordance with ASTM D 4832. Mix design shall result in a fluid product having no less than an 8-inch slump at time of placement. The Contractor shall submit a mix design for approval supported by laboratory test data verifying compliance with 28 day compressive strength requirements. Mix design shall be approved by the Engineer prior to placement.

IV. PROCEDURES

Mixing and transporting shall be in accordance with Section 217 of the Specifications or by other methods approved by the Engineer.

Temperature of flowable backfill shall be at least 50 degrees F at time of placement. Material shall be protected from freezing for 24 hours after placement.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

When used as backfill for pipe installation and floatation or misalignment occurs, correct alignment of the pipe shall be assured by means of straps, soil anchors or other approved means of restraint.

When used to fill the voids in abandoned pipes and culverts, they shall be plugged and backfilled in accordance with the plan details or as directed by the Engineer. The plugs shall be in accordance with the plan details. The backfill material shall be flowable backfill placed into the abandoned pipe or culvert without voids. The opening for culvert backfill installation shall be sealed with masonry or Class A-3 concrete at completion of backfilling.

V. MEASUREMENT AND PAYMENT

Flowable Backfill will be measured and paid for in cubic yards complete-in-place. When used as backfill material in pipe installations or in other uses at locations as designated on the plans this price shall be full compensation for furnishing and placing flowable backfill, securing the pipe alignment, and for all materials, labor, tools, equipment and incidentals necessary to complete the work. When used as backfill material for plugging designated abandoned pipes and culverts the price bid shall include furnishing and placing of backfill material and furnishing and installing plugs.

Payment will be made under:

Pay Item	Pay Unit
Flowable Backfill	Cubic yard

GUIDELINES — FOR PROJECTS WITH WATERCOURSES THAT HAVE TO BE FUNCTIONALLY PRESERVED AND YET ALLOW VEHICULAR TRAFFIC (INCLUDING CONSTRUCTION VEHICLES) TO CROSS**S302H01-0909****VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TEMPORARY VEHICULAR WATERCOURSE CROSSING**

March 25, 2009

I. GENERAL

This work shall consist of constructing a temporary vehicular watercourse crossing in accordance with these specifications and in conformity with the plans, Standard Drawings, permits and Contract documents.

II. MATERIALS

Pipe shall conform to the requirements of Section 232 of the Specifications.

Class I Dry Riprap shall conform to the requirements of Section 204.02 (b) of the Specifications.

Number 1 coarse aggregate shall conform to the requirements of Section 203 of the Specifications.

Geotextile Bedding Material shall conform to the requirements of Section 245 of the Specifications.

Timber shall be structural grade material conforming to the requirements of Section 236 of the Specifications.

III. CONSTRUCTION

The Contractor shall construct the temporary vehicular watercourse crossing at right angle to the stream. Where approach conditions dictate, the crossing may vary 15 degrees from a line drawn perpendicular to the approximate centerline of the stream.

The finished grade elevation of the crossing shall be 3 feet above the ordinary high water elevation. When not specified in the plans, or elsewhere in the Contract Documents, the Contractor shall determine the ordinary high water elevation using appropriate methods, and submit this information to the Engineer for approval prior to commencement of construction of the crossing.

Clearing and excavation of the stream bed and banks shall be kept to a minimum. The installation and removal of the crossing shall be accomplished in the dry utilizing a dry pump around or a stream diversion.

The Engineer may make minor adjustments in the location of any temporary vehicular watercourse crossing identified in the construction plans provided that the adjustment does not change the design for the temporary vehicular watercourse crossing or impact the environmental permits. In the event that the modifications are not covered by the permit, the Contractor shall be responsible for providing the information necessary for VDOT to secure the required permit modification. All temporary vehicular watercourse crossings will require a water quality permit.

Inlet and outlet ends of culverts greater than 24 inches in diameter shall be countersunk a minimum of 6 inches below the natural stream bed. Inlet and outlet ends of culverts 24 inches or less in diameter shall be countersunk a minimum of 3 inches below the natural stream bed. If bedrock is

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

encountered during installation or if steep slopes prohibit countersinking to the prescribed depth, then the work shall cease and the Contractor shall notify the Engineer.

Geotextile bedding material shall be placed on the stream bed and stream banks prior to installation of the culverts and aggregate. The geotextile bedding material shall cover the stream bed and extend a minimum of one foot beyond the end of the culverts and rip rap material.

The culverts shall extend a minimum of one foot beyond the upstream and downstream toe of the aggregate placed around the culvert.

Timbers used for temporary vehicular watercourse crossing shall be 12-inch x 12-inch timbers and shall be anchored sufficiently to prevent displacement during use or storm events.

The Contractor shall maintain the temporary vehicular watercourse crossing until no longer needed.

When no longer needed, all material associated with the temporary vehicular watercourse crossing shall be removed in their entirety and the stream bed and stream banks restored to their previous elevations. Stream banks shall be reseeded and seed bed protected by the use of geotextile embankment stabilization fabric conforming to the requirements of Section 245.03(d) of the Specifications.

IV. MEASUREMENT AND PAYMENT

Temporary Vehicular Watercourse Crossing will be measured and paid for on an each basis per location. This price shall include full compensation for furnishing and installing all materials including pipe, aggregate riprap, geotextile bedding material, timbers, providing pump around or stream diversion during construction and removal, and all labor, equipment, materials, and incidentals needed for construction, maintenance, and removal and disposal of the crossing when no longer required.

Payment will be made under:

Pay Item	Pay Unit
Temporary Watercourse Crossing	Each

GUIDELINES — FOR PROJECTS DIRECTED FOR CONSTRUCTION UNDER NO PLAN OR MINIMUM PLAN CONCEPTS. UNIT PRICE FOR EXTRA EXCAVATION "(\$fill-in amount) MUST BE FURNISHED BY THE DISTRICT.

S303DP0-0708

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
NO PLAN AND MINIMUM PLAN CONCEPT**

December 6, 2007cc

Reissued July 2008c

I. DESCRIPTION

This work shall consist of all construction or reconstruction activities in accordance with the applicable requirements of the Specifications, except where otherwise specified in this provision, and in conformity with the lines, grades and typical sections shown or established by the Engineer. This work shall include clearing and grubbing; excavation within the area of the typical section(s), construction of embankments and shoulders, construction of connections with intersecting roads, streets and entrances, both public and private, and the construction of all ditches and channels within the area of the right-of-way or easements. Unless otherwise specified, this work shall include the removal and disposal of existing road surface material, abandoned pipe culverts and minor structures. The existing road surface material shall be salvaged and used for maintenance of traffic, except when the Engineer determines that this condition is impractical.

II. MATERIALS

Materials shall be in accordance with the applicable requirements of the Specifications, except as otherwise specified in this provision or elsewhere in the contract documents.

III. TESTING

Testing on this project will be in accordance with the policy for testing on no plan and minimum plan projects in Sections 207 and 208 of the Specifications and the Material Division's Manual of Instructions.

IV. PROCEDURES

The Contractor shall perform all construction or reconstruction activities in accordance with the applicable requirements of the Specifications, except as specified as follows:

The roadway centerline shall be in accordance with the centerline shown on the plans or established by the Engineer. The grade shall generally follow that shown on the plans. In the absence of a grade line on the plans, the proposed grade shall generally follow the existing grade as directed by the Engineer. The approximate depth of centerline cuts and fills shall be obtained from the plans, except that at certain locations and at the discretion of the Engineer, a minimum number of centerline grade stakes may be furnished by the Department whereby the approximate depth of centerline cuts and fills may be obtained therefrom. Slope tolerances specified in the Specifications are waived; however, all disturbed slopes shall be uniformly grooved or rough graded as directed by the Engineer.

The roadbed shall be shaped and worked until it is smooth and free from large clods or other material unfit for use in the roadbed. Sharp breaks in the roadbed shall be eliminated and the final grade shall be compacted. The maximum gradient on all connections with intersecting roads, streets and entrances shall not exceed 10 percent, unless otherwise noted on plans or directed by the Engineer. Ditchlines shall be graded to facilitate drainage and to prevent the impoundment of water.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

Excess material from slides, ditches and channels, slopes or drainage easements, and unsuitable material cut from below grade, which cannot be used to flatten fill slopes within the right-of-way or easements, shall be disposed of by the Contractor in accordance with Section 106.04 of the Specifications.

The construction or clean out of ditches or channels extending beyond the roadway right-of-way, the removal and disposal of slide material and the removal and disposal of unsuitable material required to be removed from below subgrade will be classified as extra excavation.

V. MEASUREMENT AND PAYMENT

Measurement and payment for items of work shall be in accordance with the applicable requirements of the Specifications, except as specified as follows:

Grading will be paid for at the contract lump sum price, which price shall be full compensation for mobilization when not specified as a separate bid item; for the cost of clearing and grubbing; for all regular excavation; for construction of embankments, grading of unpaved shoulders and ditches and channels; for allaying of dust when not specified as a separate bid item; for removal and disposal of excess or unsuitable material above grade; and for removal and disposal of existing minor structures and roadway surface materials.

Extra excavation, when specified as a bid item, will be measured in cubic yards in accordance with Section 109.01 of the Specifications and will be paid for at the contract unit price per cubic yard; which price shall be full compensation for performing the required excavation and disposing of material in accordance with Section 106.04 of the Specifications or as directed by the Engineer. When not specified as a contract bid item, extra excavation will be paid for at the unit price of \$ fill-in amount per cubic yard.

Payment will be made under:

Pay Item	Pay Unit
Grading	Lump Sum
Extra Excavation	Cubic Yard

GUIDELINES — FOR PROJECTS THAT SPECIFY A TURBIDITY CURTAIN.**S303J00-0708****VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TURBIDITY CURTAIN**

January 14, 2008c

I. DESCRIPTION

This work consists of installation, maintenance and removal of a turbidity curtain, including all necessary cables, weights and floats in accordance with this provision and in conformity with the lines, grades and details shown on the plans or established by the Engineer. The curtain shall be provided as a temporary measure to minimize the drift of suspended material during construction of the project.

II. MATERIALS

The curtain shall be synthetic fabric coated with suitable elastomeric or polymeric compound; having high resistance to weathering, hydrocarbons, fresh and salt water, and temperature extremes. The fabric shall be impervious or pervious as shown in the contract. Pervious is defined as 20 percent of the fabric material allowing the passage of water. The fabric shall have a tensile strength of not less than 200 pounds per square inch when measured lengthwise or crosswise. The curtain shall form a continuous vertical and horizontal barrier for the entire width and length of each section. Seams, if required, shall be either vulcanized welded or sewn and shall develop the full strength of the fabric.

Floatation shall be flexible, buoyant units contained in a floatation sleeve or collar attached to the curtain. Buoyancy provided by the floatation units shall be sufficient to support the required width of the curtain and maintain a freeboard of at least 3 inches above the water surface level, to a minimum of one foot above the bottom or a maximum ten foot depth at all stages of water levels.

Load lines shall be fabricated into the top and bottom of the curtain. The top load line shall consist of woven webbing or vinyl sheathed steel cable and shall have a break strength in excess of 10,000 pounds. The bottom loadline shall consist of a chain incorporated into the bottom hem of the curtain of sufficient weight to serve as ballast to hold the curtain in a vertical position. Additional anchorage shall be provided if necessary. The load lines shall have suitable devices, which develop the full breaking strength for connecting to load lines in adjacent sections.

The Contractor shall submit working drawings to the Engineer for review in accordance with Section 105.10 of the Specifications.

III. INSTALLATION

The curtain shall be placed at the locations shown on the plans and in accordance with the approved working drawings. The Contractor shall maintain the turbidity curtain in order to insure the continuous protection of the waterway.

The depth of the curtain shall be such that it shall extend from the water surface to no less than one foot above the bottom, or no more than ten feet depth for the entire length of curtain at all stages of water level.

When the curtain is no longer required as determined by the Engineer, the curtain and related components shall be removed in such a manner as to minimize turbidity. The curtain and related components shall become the property of the Contractor and shall be removed from the project.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

IV. MEASUREMENT AND PAYMENT

Turbidity curtain will be measured in linear feet from edge of the curtain along the support cable. Turbidity curtain will be paid for at the contract unit price per linear foot, which price shall be full compensation for furnishing, installing, maintaining and removal of all materials necessary to complete the work.

Payment will be made under:

Pay Item**Pay Unit**

Turbidity Curtain (Type)

Linear Foot

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY). FOR PROJECTS REQUIRING EARTHWORK OR LAND DISTURBANCE ACTIVITIES. SS31504 SuperPave -Asphalt Conc Pave.

S305BM0-0609

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
STABILIZED AND PAVED SHOULDER OVERLAY
(Maintenance)

August 2, 2007c

I. DESCRIPTION

This work shall consist of furnishing and placing stabilized and paved shoulder overlay on existing stabilized and paved shoulder surfaces in accordance with the requirements of the Road and Bridge Standards and the Specifications. This is for the purpose of obtaining a resurfaced shoulder with a slope that conforms to the Road and Bridge Standards when work is completed. At locations with guardrail the finished guardrail height shall also conform to the Road and Bridge Standards when work is completed.

II. MATERIALS

Materials for stabilized and paved shoulder overlay shall be in accordance with the applicable requirements for the materials placed at the locations indicated in the Contract.

III. PROCEDURES

The Contractor shall furnish and place stabilized and paved shoulder overlay where specified. The material shall be spread, graded, and compacted in accordance with the requirements for stabilized and paved shoulders in Section 305.03(a)3 of the Specifications or as indicated elsewhere in the Contract. When overlaying the existing stabilized shoulder, the material may be paced in a single lift.

At locations without guardrail or other guide device, the width of placement of stabilized and paved shoulder overlay shall be the same as the existing stabilized or paved shoulder.

At locations with guardrail or other guide device where the existing stabilized or paved shoulder does not extend to the guardrail or other guide device, the width of placement of stabilized and paved shoulder overlay shall be the same as the existing stabilized or paved shoulder.

At locations with guardrail or other guide device where the existing stabilized or paved shoulder extends to and behind the guardrail or other guide device, the width of placement of stabilized and paved shoulder overlay shall extend to the front edge of the guardrail.

The final compacted resurfaced stabilized and paved shoulder overlay slope shall be in accordance with the requirements of the applicable standard shoulder design of Road and Bridge Standards and the Specifications. At locations where existing guardrail is not disturbed or where guardrail improvements or replacements are required, the finished guardrail height shall conform to the Road and Bridge Standards when work is completed. The guardrail installation shall be in accordance with the requirements shown in the Road and Bridge Standards and the Specifications or elsewhere in the Contract.

Shoulder restoration shall be as applied as required in accordance with the requirements in the Special Provision for **Shoulder Restoration for Guardrail Work (Maintenance)**. Shoulder

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

rehabilitation shall be as applied as required in accordance with the requirements in the Special Provision for **Shoulder Rehabilitation (Maintenance)**.

Maintaining traffic for stabilized and paved shoulder overlay shall be in accordance with the requirements in the Special Provision for **Section 512—Maintaining Traffic (Asphalt Maintenance Schedules)**.

IV. MEASUREMENT AND PAYMENT

Stabilized and paved shoulder overlay will be measured for in accordance with the requirements for the applicable items for overlaying stabilized and paved shoulders.

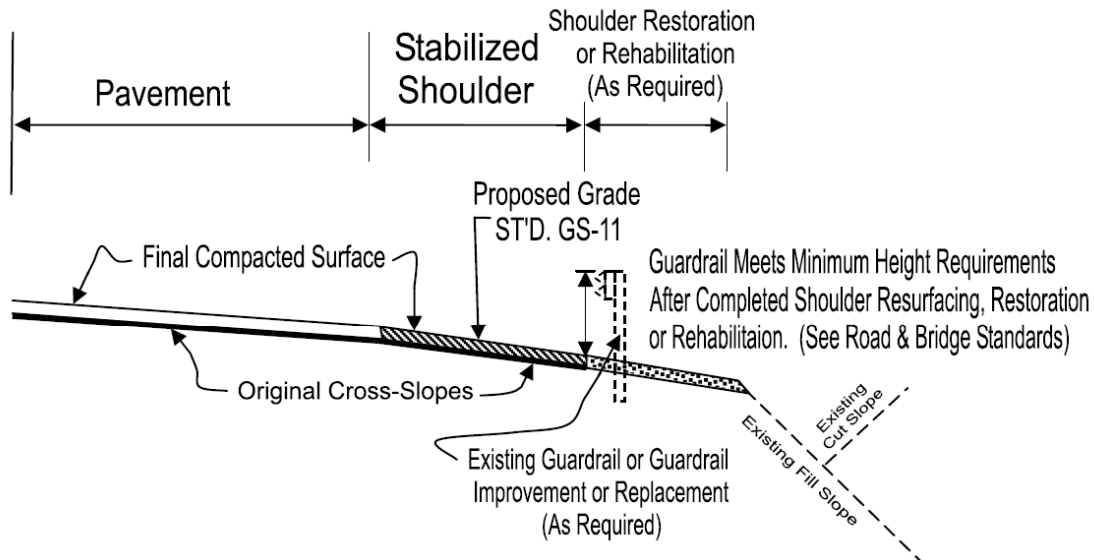
When shoulder restoration is required, measurement and payment shall be in accordance with the requirements in the Special Provision for **Shoulder Restoration for Guardrail Work (Maintenance)**. When shoulder rehabilitation is required, measurement and payment shall be in accordance with the requirements in the Special Provision for **Shoulder Rehabilitation (Maintenance)**.

When guardrail improvement or replacement is required measurement and payment shall be accordance with the requirements in the Specifications or as indicated in the Contract.

Measurement and payment for maintaining traffic for overlaying stabilized and paved shoulders shall be in accordance with the requirements in the Special Provision for **Section 512—Maintaining Traffic (Asphalt Maintenance Schedules)**.

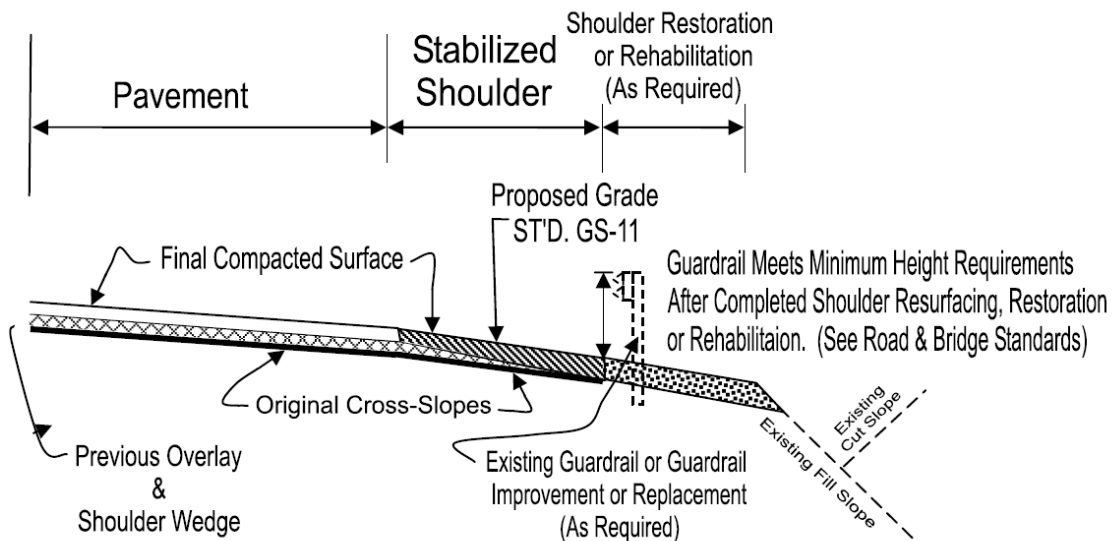
STABILIZED AND PAVED SHOULDER OVERLAY

Maintenance



Typical Section for First Overlay

Not to Scale



Typical Section for Previous Overlay

Not to Scale

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES — ASPHALT PROJECTS WHERE PLANT MIX OVERLAY CREATES A SHOULDER THAT IS OUT OF COMPLIANCE WITH THE ROAD AND BRIDGE STANDARDS. MAY ALSO BE USED IN AREAS WHERE EXISTING SHOULDER IS ALREADY OUT OF COMPLIANCE.

S305CM0-0609

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SHOULDER REHABILITATION
(Maintenance)

August 23, 2007c

I. DESCRIPTION

This work shall consist of building up and grading existing shoulders, with or without existing guardrail, to obtain a shoulder slope and guardrail height that conforms to the Road and Bridge Standards when work is completed. This is for the purpose of eliminating existing low shoulders or low shoulders created by plant mix overlay, and to level existing high shoulders created by debris buildup.

II. MATERIALS

Aggregate base material (type and size specified) shall conform to section 208 of the Specifications.

III. PROCEDURES

Aggregate base material and/or machining the shoulders, where specified, shall be applied as directed by the Engineer to accomplish this work.

This work, where specified due to plant mix overlay, shall be completed within one week following the plant mix overlay except in areas slated for guardrail improvements or replacements in this or other Contracts.

The Contractor shall furnish and place aggregate base material where specified. The material shall be spread, graded, and compacted in accordance with the requirements of Section 305.03(a)3 of the Specifications, except for the shaping of the subgrade which will not be required.

Shoulders shall be raised or lowered by applying aggregate base material and/or machining the shoulders, where specified, to smoothly tie the graded shoulder edge elevation to the adjoining elevation of the final pavement surface edge or final paved or stabilized shoulder surface edge. Final pavement surface edge or final paved or stabilized shoulder surface edge shall include existing pavement not designated for overlay and completely compacted pavement overlay. The graded shoulder shall also be graded to obtain a uniform shoulder slope to the shoulder break that conforms to the applicable standard shoulder design in the Road and Bridge Standards. The guardrail height shall conform to the Road and Bridge Standards when work is completed.

The Contractor shall promptly remove and dispose of surplus material encountered as a result of this procedure and any shoulder material left or tracked on the pavement.

Maintaining traffic for shoulder rehabilitation shall be in accordance with the requirements in the Special Provision for **Section 512—Maintaining Traffic (Asphalt Maintenance Schedules)**.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

IV. MEASUREMENT AND PAYMENT

Aggregate base material will be measured in tons. The accepted quantities of aggregate base material will be paid for at the contract unit price per ton, which shall be full compensation for furnishing, delivering, placing, compacting, grading the material, and removing and disposing of surplus, tracked and spilled material resulting from the Contractor's operations.

Machining shoulders, when required, will be measured in linear feet along the adjacent edge of pavement. The accepted quantities of machining shoulders will be paid for at the contract unit price per linear foot, which shall be full compensation for grading, compacting, removing and disposing of surplus, tracked and spilled material resulting from the Contractor's operations.

Measurement and payment for maintaining traffic for **Shoulder Rehabilitation** shall be in accordance with the requirements in the Special Provision for **Section 512—Maintaining Traffic (Asphalt Maintenance Schedules)**.

Payment will be made under:

Pay Item

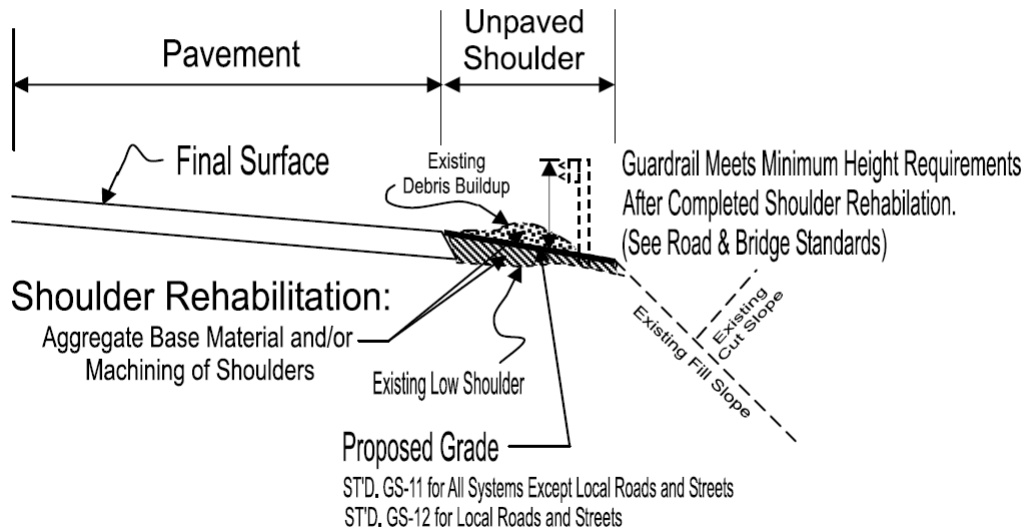
Aggregate Base Material, Type (), No. ()
Machining Shoulders

Pay Unit

Ton 16242
Linear Foot 16387

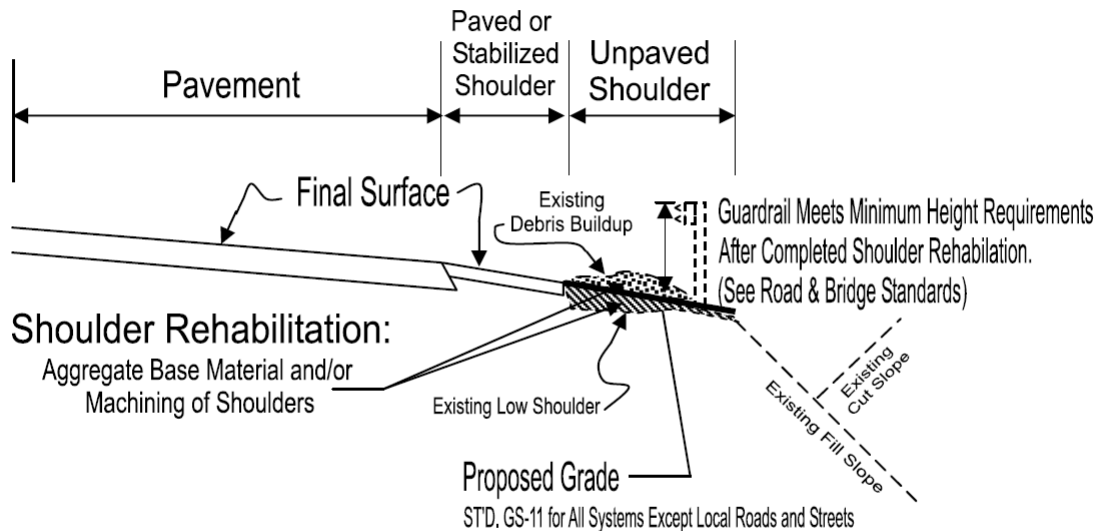
SHOULDER REHABILITATION

Maintenance



Typical Section for Unpaved Shoulder

Not to Scale



Typical Section for Paved or Stabilized Shoulder

Not to Scale

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES – ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY) WITH GUARDRAIL IMPROVEMENTS OR REPLACEMENTS ONLY. AN SPON, PLAN NOTE, GENERAL NOTE OR DRAWING etc. SPECIFYING THE ADDITIONAL DISTANCE UPSTREAM AND DOWNSTREAM THAT SHOULDER RESTORATION EXTENDS SHOULD BE INCLUDED IN THE CONTRACT ASSEMBLY IF SHOULDER RESTORATION EXTENDS BEYOND GUARDRAIL.

S305DM0-1209

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SHOULDER RESTORATION FOR GUARDRAIL WORK
(Maintenance)

August 23, 2007

I. DESCRIPTION

This work shall consist of building up and grading existing shoulders, where guardrail improvements or replacements are specified, to obtain a shoulder slope and guardrail height that conforms to the Road and Bridge Standards when work is completed. This is for the purpose of eliminating the existing low shoulder or the low shoulder created by plant mix overlay, to level the existing high shoulder created by debris buildup, and to restore shoulders disturbed due to guardrail improvements or replacements.

II. MATERIALS

Aggregate base material (type and size specified) shall conform to section 208 of the Specifications.

III. PROCEDURES

Aggregate base material, grading shoulder material and stone, and machining the shoulders, where specified, to reconstruct the shoulders to the proposed grade shall be applied as directed by the Engineer to accomplish this work.

The Contractor shall furnish and place aggregate base material where specified. The material shall be spread, graded, and compacted in accordance with the requirements of Section 305.03(e) of the Specifications, except for the shaping of the subgrade which will not be required.

The shoulder shall be raised or lowered by applying aggregate base material, grading existing shoulder material and stone, and/or machining the shoulders, where specified, to smoothly tie the graded shoulder edge elevation to the adjoining elevation of the final pavement surface edge or final paved or stabilized surface shoulder edge. Final pavement surface edge or final paved or stabilized shoulder surface edge shall include existing pavement not designated for overlay and completely compacted pavement overlay. The restored shoulder shall also be graded to obtain a uniform shoulder slope to the shoulder break that conforms to the applicable standard shoulder design in the Road and Bridge Standards.

The shoulder shall be graded and/or machined after the existing guardrail has been removed and prior to installation of new guardrail or reinstallation of updated guardrail. This is to level any shoulder material that may have built up under the existing guardrail and to allow for the placement of aggregate base material at low shoulder areas prior to guardrail installation. This shoulder restoration shall extend an additional distance, specified elsewhere in the Contract, upstream and downstream of each guardrail section improvement or replacement.

The width of placement of aggregate base material and the graded and/or machined shoulders shall be as needed to allow for the installation of new guardrail or reinstallation of updated guardrail in

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

accordance with the requirements shown in the Road and Bridge Standards and the Specifications or as indicated in the schedule of work or elsewhere in the Contract. The guardrail height shall conform to the Road and Bridge Standards when work is completed.

The Contractor shall promptly remove and dispose of surplus material encountered as a result of this procedure and any shoulder material left or tracked on the pavement.

Maintaining traffic for providing shoulder restoration for guardrail work shall be in accordance with the requirements in the Special Provision for **Section 512—Maintaining Traffic (Maintenance)**.

IV. MEASUREMENT AND PAYMENT

Aggregate base material will be measured in tons. The accepted quantities of aggregate base material will be paid for at the contract unit price per ton, which shall be full compensation for furnishing, delivering, placing, compacting, grading the material, and removing and disposing of surplus, tracked and spilled material resulting from the Contractor's operations.

Shoulder Restoration will be measured in linear feet along the adjacent edge of pavement from the point upstream specified in the Contract to the point downstream specified in the Contract of each guardrail section improvement or replacement installation. The accepted quantities of shoulder restoration will be paid for at the contract unit price per linear foot, which shall be full compensation for grading, compacting, removing and disposing of surplus, tracked and spilled material resulting from the Contractor's operations.

When guardrail improvement or replacement is required measurement and payment shall be accordance with the requirements in the Specifications or as indicated in the schedule of work or elsewhere in the Contract.

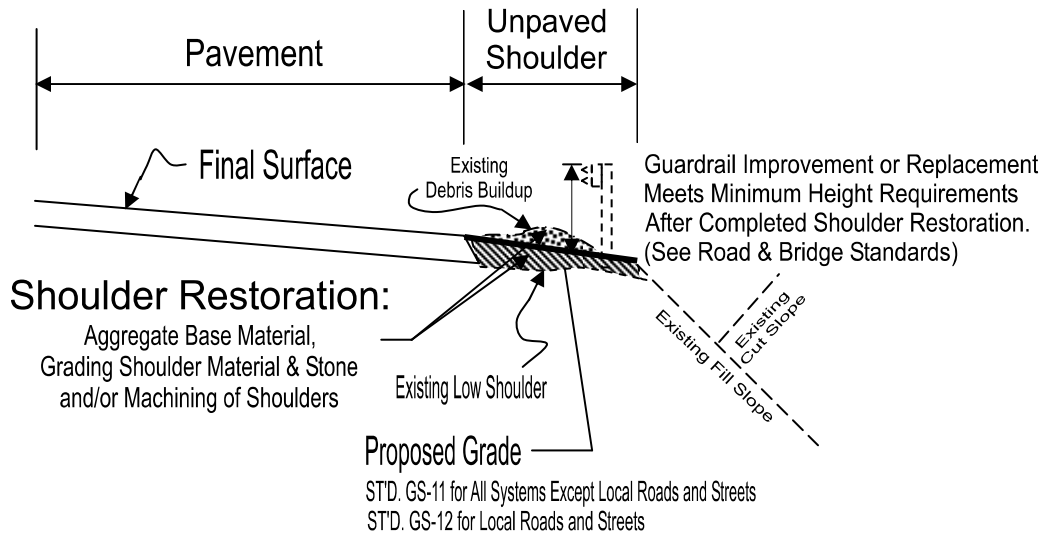
Measurement and payment for maintaining traffic for shoulder restoration for guardrail work shall be in accordance with the requirements in the Special Provision for **Section 512—Maintaining Traffic (Maintenance)**.

Payment will be made under:

Pay Item	Pay Unit
Aggregate Base Material, Type (), No. ()	Ton
Shoulder Restoration	Linear Foot

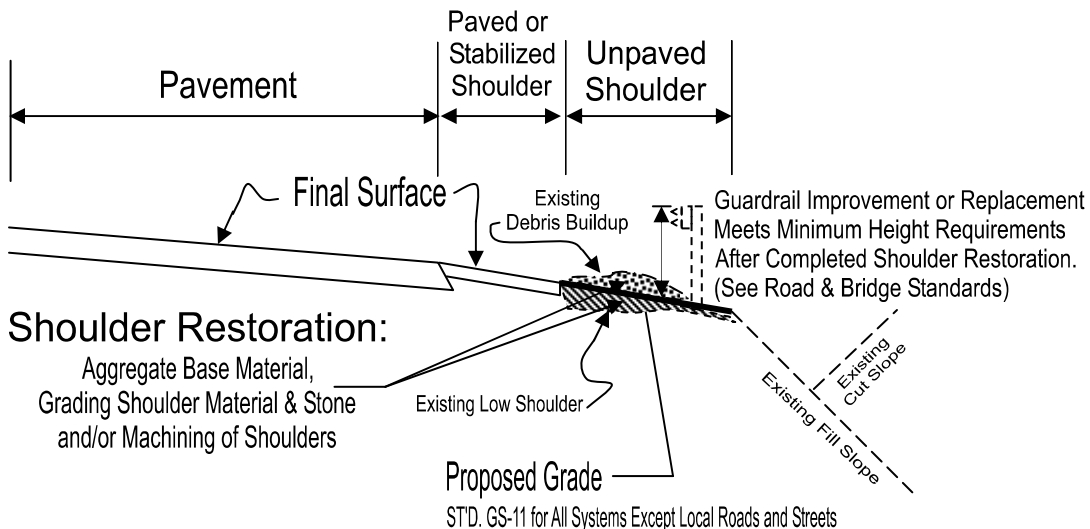
SHOULDER RESTORATION FOR GUARDRAIL WORK

Maintenance



Typical Section for Unpaved Shoulder

Not to Scale



Typical Section for Paved or Stabilized Shoulder

Not to Scale

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY).**S310AM1-1209****VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
NONTRACKING TACK COAT**

October 7, 2009

I. DESCRIPTION

This work will only be required if specified elsewhere in the Contract. If such work is specified, it will be required only on the routes and only at the locations specified. The Contractor will be permitted to do such work, if he chooses, at areas not required in the Contract at no cost to the Department. Such work shall consist of preparing and treating an existing asphalt or concrete surface with asphalt in accordance with the requirements of these specifications and in conformity with the lines shown on the plans or as established by the Engineer.

II. MATERIALS

Liquefied asphalt materials for non-tracking tack coat must be on the Department's list of approved non-tracking tack coat materials. Non-tracking tack coat materials shall not be diluted with water.

III. PROCEDURES

Equipment for heating and applying asphalt shall conform to the requirements of Section 314.04(b) of the Specifications or the non-tracking tack coat material's manufacturer's recommendations. The maximum application temperature of liquefied asphalt shall conform to the manufacturer's requirements.

The existing surface shall be patched when necessary, cleaned, and rendered free from irregularities to the extent necessary to provide a reasonably smooth and uniform surface. Unstable corrugated or deteriorated areas of existing pavement shall be removed and replaced with suitable patching materials. The edges of existing pavements that will be adjacent to new pavement shall be thoroughly cleaned to permit adhesion of asphalt.

Tack material shall be uniformly applied with a pressure distributor conforming to the requirements of Section 314.04(b) of the Specifications. Hand spray equipment shall not be used except in areas inaccessible by a pressure distributor. The tack material shall be applied at a rate recommended by the manufacturer. This rate is typically between 0.05 to 0.10 gallons per square yard. The asphalt tack shall be applied to the pavement surface in such a manner that it will bond the overlay and the underlying surfaces together.

Application of tack at joints, adjacent to curbs, gutters, or other appurtenances shall be uniformly applied with a hand wand or with a spray bar at the rate of 0.2 gallon per square yard.

The tack coat shall be applied in a manner to offer the least inconvenience. All traffic, including construction traffic, shall be excluded from sections treated with non-tracking tack until the tack has cured and will no longer track onto adjacent non-treated areas.

The tack coat shall be applied in accordance with the same weather limitations that apply to the course being placed as well as the manufacturer's recommendations. The quantity, rate of application, temperature, and areas to be treated shall be approved by the Engineer prior to application of the tack coat.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

Adjacent concrete or asphalt concrete surfaces shall show minimal visible evidence and white or yellow pavement markings shall show no visible evidence of tracking of the asphalt tack material at the end of the production shift. Tracking of the tack material on pavement markings will require the Contractor to immediately restore the marking to their original pre-tack condition. Build-up of the tacking material on existing pavement surfaces shall be removed by the Contractor.

During the application of non-tracking asphalt tack coat, care shall be taken to prevent spattering adjacent items or vehicular traffic. The distributor shall not be cleaned or discharged into ditches or borrow pits, onto shoulders, or along the right of way. When not in use, application equipment shall be parked so that the spray bar or mechanism will not drip asphalt on the surface of the traveled way.

IV. REFEREE SYSTEM

When the new asphalt course is placed on a milled or non-milled surface, the Contractor shall take steps to ensure an adequate bond between the new material and existing surface. If the Engineer suspects the Contractor is failing to apply good bond promoting procedures or adequately tacking the existing surface per the manufacturer's recommendations, the Department may core a minimum of 6 locations to determine the shear and tensile strength at the interface. These locations will be determined through a stratified random selection process. Cores will be tested in the Department's laboratory in accordance with the procedures described in report VTRC 09-R21. For the surface to be acceptable, the average results for shear and tensile strength must be met. A minimum of 3 cores will be tested for shear and 3 cores for tensile strength. The average shear strength must meet or exceed 100 psi with no single core having a shear strength less than 50 psi on a milled surface. The average shear strength must meet or exceed 50 psi with no single core having a shear strength less than 30 psi on a non-milled surface. The average tensile strength of the remaining cores must meet or exceed 40 psi with no single core having a tensile strength less than 20 psi on a milled surface. The average tensile strength of the remaining cores must meet or exceed 30 psi with no single core having a tensile strength less than 20 psi on a non-milled surface. In the event the minimum shear or tensile strength requirements are not met, then payment for the asphalt concrete tonnage placed in the area in dispute shall be reduced by 10 percent.

V. MEASUREMENT AND PAYMENT

Nontracking tack coat, the cost thereof, shall be included in the price for other appropriate pay items.

Patching will be paid for at the contract unit price for the various items used unless a reconditioning item is included in the Contract.

VI. REFERENCES

McGhee, K.K , and Clark, T.M. *Bond Expectations for Milled Surfaces and Typical Tack Coat Materials Used in Virginia*. VTRC 09-R21. Virginia Transportation Research Council, Charlottesville, 2009.

GUIDELINES – ASPHALT SURFACE TREATMENT PROJECTS. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: S314CM1 Asphalt Surface Treatment.

S312CM0-1009

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
BLOTTED SEAL COATS

August 22, 2008c

I. DESCRIPTION

This work shall consist of application of asphalt surface treatment in accordance with this provision and in conformity with the line and grades indicated in the contract documents or designated by the Engineer.

Type B Blotted Seal is defined as two applications of liquid asphalt material, one application of cover aggregate and one application of blot fine aggregate.

Type C Blotted Seal is defined as three applications of asphalt material, two applications of cover aggregate and one application of blot fine aggregate.

Type D Blotted Seal is defined as four applications of asphalt material, three applications of cover aggregate and one application of blot fine aggregate.

II. MATERIALS

Liquid asphalt materials shall conform to Section 210 of the Specifications.

Cover aggregate shall conform to Section 203 of the Specifications.

Fine aggregate for blotting shall conform to Section 202 minimum Grading B of the Specifications except that material shall have no more than 5 percent passing the 200 sieve by washing.

III. APPLICATION

Application rates for asphalt and aggregate material shall be as indicated in the contract documents. These rates of application are approximate only and such rates may be altered at the direction of the Engineer. During application, liquid asphalt material shall be maintained between 160 to 175 degrees F. Cover material shall be applied to a complete coverage of only one aggregate depth over the treated surface.

IV. PROCEDURES

Procedures shall be in accordance with the Asphalt Surface Treatment (Maintenance) special provision and the following provisions:

Each coat of **liquid asphalt** material shall be applied to existing surface and immediately followed by an application of aggregate.

Aggregate shall be rolled one pass immediately with a self-propelled steel wheel roller. The roller weight shall be between 6 and 8 tons for tandem type and between 8 and 10 tons for the three wheel type.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

Blot coat shall be applied with a self-propelled aggregate spreader of approved design and shall be rolled one pass immediately with a self-propelled roller.

V. MEASUREMENT AND PAYMENT

Blotted seal coat will be measured and paid for in square yards for type specified complete-in-place, which price shall be full compensation for furnishing and applying liquid asphalt material, cover material and blot fine aggregate, protection of treatment, rolling, brooming and for all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Blotted Seal Coat (Type)	Square Yard

GUIDELINES – ASPHALT SLURRY SEAL PROJECTS**S312DM1-1109**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
EMULSIFIED ASPHALT SLURRY SEAL

November 2, 2009

I. DESCRIPTION

This work shall consist of furnishing and applying an emulsified asphalt slurry seal as specified herein and as directed by the Engineer.

II. MATERIALS

A. **Asphalt Emulsion:** Emulsified asphalt shall conform to the requirements of Section 210 of the Specifications; except it shall be a quick setting emulsion and the following requirements shall apply:

1. The emulsion shall be designated CQS-1h cationic quick setting emulsion and shall conform to the requirements of Cationic Type CSS-1h.
2. The Cement Mixing Test is waived.
3. Emulsion Setting Time - Prior to shipment of each new formulation of emulsified asphalt, the Contractor shall perform a towel test to verify that the emulsion will set sufficiently quick for early release of traffic. Testing for setting time shall be in accordance with VT-89.

B. **Aggregate:** Aggregate shall be crushed stone and except for locations where the posted speed limit is 15 miles per hour or less and for roadways in Traffic Groups I through VII; it shall be non-polishing. The quality of aggregate shall conform to the requirements of Section 202 of the Specifications except that the loss on soundness shall not exceed 18 percent. The sand equivalent value shall not be less than 40.

Gradation shall be as follows for the type mix specified:

DESIGN RANGE TABLE			
SIEVE SIZE	TYPE A (% Passing)	TYPE B (% Passing)	TYPE C (% Passing)
No.3/8	100	100	100
No.4	100	90-100	70-95
No.8	65-90	65-90	45-70
No.16	45-70	45-70	32-54
No.30	30-50	30-50	23-38
No.50	18-33	18-33	16-29
No.100	10-21	10-21	9-20
No.200	5-15	5-15	5-12
Design Asphalt	8.0 – 10.5%	8.0 - 10.5%	7.0 - 9.5%

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



Content Range*

*Residual Asphalt content by weight of dry aggregate.

- C. **Mineral Filler:** Mineral filler shall conform to the requirements of Section 201 of the Specifications.
- D. **Water:** Water used in the mix shall conform to the requirements of Section 216 of the Specifications.
- E. **Mix Design:** The Contractor shall submit for the Engineer's approval a mix design for each type slurry on Form TL-127, results of the Compatibility Test as per VTM-60, and wear loss by the Wet Track Abrasion Test (WTAT) as prepared by an approved testing laboratory. The WTAT shall be performed in accordance with VTM-14. The wear loss shall not be greater than 75 grams per square foot. The wear loss shall apply to the asphalt content limits designated on the job mix formula. Such limits shall be determined by selecting the optimum asphalt content from the WTAT loss curve and within the ranges shown in the Design Range Table in II.B herein and applying a tolerance of plus or minus 1.5 percent. WTATs shall then be taken only once per mix type per aggregate type.
- F. **Test Strip:** The Contractor shall place a test strip for approval by the Engineer prior to beginning the work. The mix consistency shall be determined by the Contractor in accordance with current International Slurry Seal Association Technical Bulletin Number 106 and shall be 2.5 cm, plus or minus 0.5 cm. Calibration data as specified in III.B of herein shall be provided prior to placing the test strip.
- G. **Mix Sampling and Testing Requirements:** Testing for gradation shall be based on an approved aggregate producer's modified acceptance production control plan. Gradation shall conform to the ranges specified in II.B herein.

Samples for asphalt content shall be taken from the completed mix and will be tested by the Department. The frequency of sampling and testing will be established by the Engineer based upon the Department's current acceptance program. The asphalt content will be determined by the Ignition Method (VTM-102) or nuclear gauge (VTM-90), as determined by the Engineer.

Samples representing a maximum of 25,000 square yards will be taken from material produced by each mixing unit for asphalt content determination in the beginning. Upon establishing consistency, testing frequency shall be reduced to a minimum of one test per 50,000 square yards.

At the discretion of the Engineer, the Contractor shall perform a minimum of two consistency tests for each day's production as specified in F herein, and shall conduct additional tests as requested.

At the discretion of the Engineer, materials from the job site will be tested for Wet Track Abrasion in accordance with VTM-14 and the Department's current acceptance program. The WTAT loss shall not be greater than 75 grams per square foot.

- H. **Personnel**

The Contractor shall have a Department certified Slurry Surfacing Technician on the job site to control the work.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

III. EQUIPMENT

- A. **General:** All equipment, including hand tools, shall be designed or suitable for the application of slurry and be in good working order. A mobile unit is required and shall be equipped with an accurate mineral filler feeder, a fog type spray bar, be capable of an operation speed of 60 feet per minute, and have capacity to store mix components to produce a minimum of five tons of slurry seal. The equipment shall be capable of delivering a continuous uniform and homogeneous mixture of aggregate, emulsion, water, and mineral filler to the spreader box. Mixing aid additive dispensers, if used, shall be capable of uniformly adding the additive to the water line prior to entering the mixing chamber.
- B. **Equipment Calibration:** The Contractor shall provide current year data for each mixing unit utilizing materials from the same sources as those to be used on the project. Data for each unit shall be in the form of a graphic scale indicating the stone gate setting required to obtain the residual asphalt content as determined in the mix design. Such data shall be maintained with each unit.
- C. **Spreader:** The spreader shall be equipped with a flexible type squeegee positioned in contact with the pavement surface. The spreader shall be designed to apply a uniform spread with a minimum loss of slurry. The spreader box shall be equipped with augers extending its full width which shall uniformly distribute the slurry mixture across the entire width of the box. The box shall be equipped with an approximately 18-inch wide burlap drag to smooth the slurry surface.
- D. **Suspension of Work:** If during the life of this project excessive loss of cover aggregate occurs, the Engineer may suspend the work in accordance with Section 108.05 of the Specifications until the cause of the loss of cover material is corrected.

IV. PROCEDURES

- A. **Beginning Work:** The Contractor shall notify the Engineer at least three work days prior to beginning work. Upon request by the Department, the Contractor shall provide 6 quarts of liquid emulsion and 50,000 grams of aggregate material for the Department's use in determining asphalt content. The contractor shall perform ignition oven calibrations and submit them with the job-mix formula (JMF) to the Department two weeks prior to the beginning of the work.
- B. **Preparation of Surface:** The surface upon which slurry seal is to be applied shall be thoroughly cleaned of all loose material, vegetation, silt spots, and other objectionable materials by either brooming or the use of compressed air.
- C. **Application:** When warranted by local conditions or when the pavement temperature is above 90 degrees F, the surface of the pavement shall be fogged with water at a rate of 0.05 gallons per square yard immediately preceding the pass of the spreader. The slurry mixture shall be of a consistency such that it "rolls" in the spreader box in a continuous mass. Slurry that segregates in the spreader box, so that flowing of liquids (water and emulsion) is evident, is not acceptable and shall not be applied. The liquid portion of a slurry mixture shall not flow from either the spreader box or the applied slurry. Evidence of such flow shall be sufficient cause for rejection of the applied material. A mixing aid additive may be used when necessary to accommodate slow placements or high temperatures.

The slurry shall be uniformly placed on the road in full lane widths up to and including 12 feet. Excess buildup of slurry on longitudinal and transverse joints shall be corrected.

Treated areas shall not be opened to traffic until such time as the slurry seal has cured to the extent that it will no longer be damaged by traffic. Where earlier opening to traffic is necessary, such as at entrances, the contractor may lightly sand the surface using the same aggregate as in the mix and may be required to remove excess aggregate from the roadway in curb and gutter sections. The applied slurry mixture shall be uniform in texture and shall not flush under traffic. In the event a failure occurs prior to acceptance, the Contractor shall repair or replace the failed treatment as directed by the Engineer.

Slurry Seal surface course shall not be applied on surfaces containing puddled water and on surfaces less than 50 degrees F, except that in the early "AM" the minimum surface temperature will be 40 degrees F provided the ambient temperature is expected to be above 60 degrees F and there is no forecast of ambient temperature below 32 degrees F within 24 hours from the time the material is applied.

Should oversize aggregate be encountered, the Contractor shall immediately cease operation until approved corrective measures have been taken.

- D. **Rate of Application:** The minimum aggregate application rate shall be 16 pounds per square yard for Type A and Type B and 20 pounds per square yard for Type C.

1. **Exceptions for Salem District, Henry and Patrick counties only:** Type B minimum aggregate application rate shall be 14 pounds per square yard.

The Contractor shall provide to the Engineer aggregate weight tickets, a daily delivery summary, and an estimate of aggregate lost and otherwise not used in the work for each stockpile location. Where disagreements occur, the Engineer shall have the final judgment of such loss.

- E. **Test Failure:**

1. Asphalt Content - Samples representing a maximum of 25,000 or 50,000 square yards will be taken from material produced by each mixing unit for asphalt content determination. The asphalt content of such samples shall be within plus or minus 1.5 percent of the approved job mix. When two successive tests from a mixing unit fail or one test fails by more than two percent, that mixing unit shall be removed from service until approved by the Engineer.
2. Consistency Test - Upon failure, adjustment shall be made in the mix immediately and rechecked. If more than two consecutive tests fail, work shall cease. The equipment and/or materials shall be adjusted and approved by the Engineer before proceeding.
3. Wet Track Abrasion Test (WTAT) - Upon failure, adjustment shall be made in the mix and/or process immediately and rechecked. If two or more consecutive tests fail, work shall cease until the cause is determined and remedied and approved by the Engineer.

- F. **Price Adjustment:**

1. Emulsified asphalt certified weight tickets showing the residual asphalt content shall be provided to the Engineer. Asphalt not used shall be documented and considered in determining the percent of asphalt used on the total project. Upon completion of the project, the percent of asphalt shall be determined by dividing the calculated weight of residual asphalt by the delivery ticket weight of

aggregate used in the work. A one percent reduction in the unit price per square yard will be applied for each one-tenth of a percent the residual asphalt content is more than one percent below the approved job mix formula (JMF).

2. Application Rate - a three percent reduction in price per square yard will be applied for each pound of aggregate per square yard less than the specified application rate. The square yards retreated, if any, shall be added to the total square yards retreated, if any, shall be added to the total square yards for calculation of application rate. The price adjustment will be applied to the total square yards for which payment is made. Material applied over the specified application rate will not be considered for extra payment.

Price adjustments under 1 and 2 herein shall apply concurrently.

V. MEASUREMENT AND PAYMENT

Emulsified asphalt slurry seal will be measured and paid for in square yards on a plan quantity basis for the type specified. Authorized increases and decreases to plan quantities will be adjusted in accordance with Section 109.02 of the Specifications. Payment shall be full compensation for furnishing, applying, testing, and maintenance of traffic.

When vacuuming is required by the Engineer, the Contractor will be paid **\$85** per hour for loose particle removal, by mobile vacuum unit with no less than an eight cubic yard capacity, which price shall include each operator and the necessary equipment, maintenance and all incidentals necessary to perform this operation.

Payment will be made under:

Pay Item	Pay Unit
Emulsified asphalt slurry seal, (Type)	Square yard

GUIDELINES – ASPHALT LATEX MODIFIED EMULSION TREATMENT PROJECTS**S312EM1-1109**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
LATEX MODIFIED EMULSION TREATMENT (MICRO-SURFACING)
(Maintenance)

November 2, 2009

I. DESCRIPTION

This work shall include furnishing and placing a latex modified emulsion to existing roadway surfaces as specified herein and as directed by the Engineer.

II. MATERIALS

A. **Emulsified asphalt** shall be a quick set latex modified cationic emulsion conforming to the requirements of Section 210 of the Specifications and the following:

1. The emulsion shall be designated CQS-1h cationic quick setting emulsion and shall conform to the requirements of Cationic Type CSS-1h.
2. Ring and ball softening point of the residue, minimum = 140 degrees F.
3. Pass towel test (VTM-89) in the 30 minutes at room temperature with job materials.
4. Residue, percent by evaporation, minimum 62 percent as determined by VTM-78.
5. Material shall be furnished in accordance with the Departments Asphalt Acceptance Program.

B. **Aggregate** shall be non-polishing crushed stone conforming to the requirements Section 202 of the Specifications, except the soundness loss shall not exceed 18 percent.

Gradation of the aggregate shall be in accordance with the following:

SCREEN SIZE	TYPE A (% Passing)	TYPE B (% Passing)	TYPE C (% Passing)	RUTFILLING (% Passing)
No.3/8	100	100	100	100
No.4	100	90-100	70-95	70-95
No.8	65-90	65-90	45-70	45-70
No.16	45-70	45-70	32-54	32-54
No.30	30-50	30-50	23-38	23-38
No.50	18-33	18-33	16-29	16-29
No.100	10-21	10-21	9-20	9-20
No.200	5-15	5-15	5-12	5-12

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



- C. **Mineral filler** shall be non-air entrained hydraulic cement, Type I, conforming to the requirements of Section 214 of the Specifications or hydrated lime conforming to the requirements of Section 240.02(a) of the Specifications. When requested by the Engineer a manufacturers Certification will be required.
- D. **Water** shall conform to the requirements of Section 216 of the Specifications.
- E. **Latex modifier** along with emulsifiers shall be milled into the asphalt emulsion by an approved emulsion manufacturer.
- F. **Additives** may be used by the Contractor to provide control of the break/set time in the field. The type of additive shall be specified in the mix design.
- G. **Sampling requirements** for gradation shall be taken from aggregate stockpiles designated by the Contractor. These stockpiles shall be located in the aggregate producer's quarry and acceptance for gradation will be based on an approved aggregate Producer's modified acceptance production control plan. Samples for Marshall tests and asphalt content shall be taken from the completed mix for testing by the Department. The frequency of sampling and testing will be established by the Engineer based upon the Department's acceptance program. The asphalt content will be determined by the Ignition Method (VTM-102) or nuclear gauge (VTM-90), as determined by the Engineer.

III. MIX DESIGN

- A. The mixture shall be designed in a Department approved lab by the Contractor for the Engineer's approval and the job mix formula shall provide the following:
 - 1. Compatibility of latex, aggregate and emulsion in accordance with the Schulze-Breuer Test procedure. Other procedures approved by the Engineer may be used. The test shall be run at the design stage and when requested by the Engineer.
 - 2. A minimum Marshall Stability of 1800 pounds when tested in accordance with VTM-95.
 - 3. A flow of between 6 and 16 units when tested in accordance with VTM-95.
 - 4. An asphalt content that produces 4.7 percent voids in total mix for surface and 6.5 percent voids for rutfilling when tested in accordance with VTM-95.

Aggregate used in the job mix formula shall be from the same source and representative of the material proposed by the Contractor for use on the project.

- B. Proportioning of the mix design shall be within the following limits:

	Type A	Type B	Type C	Rutfilling
% Residual Asphalt (by wt. of dry aggr.)	6.5-8.5	6.5-8.5	5.0-7.5	4.5-6.5
% Mineral Filler	0.26-3.00	0.26-3.00	0.25-3.00	0.25-3.00
% Latex Modified-Solids (by wt. of residual asp.)	3.0 Min.	3.0 Min.	3.0 Min.	3.0 Min.
Additive	As Required	As Required	As Required	As Required

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

IV. EQUIPMENT

All equipment, including hand tools, shall be designed or suitable for the application of micro-surfacing and in good working condition.

- A. **Mixing equipment** shall produce the asphalt mixture in a self-propelled, front feed, continuous loading, and mixing machine. The unit shall deliver and proportion the aggregate, emulsion, mineral filler, control setting additive and water to a revolving multi-blade shafted mixer and discharge the mixture on a continuous and uniform basis. A mobile unit will be permitted on areas less than 15,000 square yards provided a sufficient number of units are used to promote an efficient continuous type operation which minimizes disruption to traffic and provided the units are equipped with a twin shaft mixer capable of an operational speed of 60 feet per minute and have a capacity to store and mix components to produce a minimum of 5 tons of mix. All equipment shall be capable of delivering a continuous, uniform, properly proportioned, and homogenous mixture to the spreading unit.

Individual volume or weight controls for proportioning each material shall be provided and meters or counters shall be such that the Engineer may readily and accurately determine the amount of each material used at anytime.

The mixing machine shall be equipped with a water pressure system and nozzle type spray bar to provide a water spray immediately ahead of and outside the spreader box when required.

- B. **Equipment calibration** shall be provided by the Contractor stating the current year data for each mixing unit using materials from the same sources as those to be used on the project. Data for each unit shall be in the form of a graphic scale indicating the proportioning controls settings required to obtain the residual asphalt content as determined in the mix design. Such data shall be maintained with each unit.

- C. **Spreading equipment** shall uniformly spread the paving mixture by means of a mechanical type spreader box attached to the mixer and equipped to agitate and spread the materials throughout the box. The box shall be designed and operated so all the mixed material will be kept homogenous and moving with no evidence of premature breaking during laydown. A front seal shall be provided to ensure no loss of the mixture at the road contact surface. The rear flexible seal shall act as a final strike off and shall be adjustable. The spreader shall be maintained to prevent the loss of the paving mixture in the surfacing super-elevated curves. The spreader box and rear strike-off shall be so designed and operated that a uniform consistency is achieved and produces a free flow of material to the rear strike-off without causing skips, lumps, ripples or tears in the finished surface. A secondary strike-off may be used to improve surface texture.

Rutfilling, when required, shall be accomplished by means of a box specifically designed for that purpose. The box shall be of one-half lane width and have a dual chamber with an inner v configuration of augers to channel the large aggregate to the center of the rut and the fines to the edges of the rut fill pass. The box shall be equipped with dual steel strike-off to control both the width and depth of the rutfill.

- D. **Pneumatic roller** may be required by the Engineer, at no cost to the Department, if excessive loss of aggregate is observed. The roller shall be equipped with treaded tires having an air pressure of 40 – 60 pounds per square inch (psi).

V. PROCEDURES

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

- A. **Beginning work**, The Contractor shall notify the Engineer at least three work days prior to beginning work. Up on request by the Department, the Contractor shall provide 6 quarts of liquid emulsion and 50,000 grams of aggregate material for the Department's use in determining asphalt content. The contractor shall perform ignition oven calibrations and submit them with the job-mix formula (JMF) to the Department two weeks prior to the beginning of the work.
- B. **Surface preparation**, prior to applying the paving mixture, the surface shall be thoroughly cleaned of all vegetation, loose materials, dirt, mud and other objectionable materials. Prior to paving, an asphalt tack coat Type CSS-1h diluted three parts water to one part asphalt shall be applied at a rate 0.05 gallons per square yard. When required by field conditions prewetting of the tacked surface shall be applied evenly at a rate that will uniformly dampen the entire roadway surface.

All cost for furnishing and applying the tack coat and prewetting shall be included in the price bid for "Latex Modified Emulsion Treatment".

C. **Application types and rates**

1. Rutfilling shall be placed by means of a specially designed rutfilling box that will leave the surface crowned between 1/8 and 1/4 inch per inch depth to allow for traffic compaction to approximately a level surface. The Contractor shall provide and use a ten foot straight edge to control the depth and crown.
2. Latex Modified Emulsion Treatment for leveling course shall consist of an initial application to prepare for the surface course. The minimum application rates shall be 16 pounds per square yard for Type B and 20 pounds per square yard for Type C.
3. Latex Modified Emulsion Treatment (LMET) for surface course shall consist of the final application which serves as the pavement surface. The LMET shall be placed at an application rate of 16 to 20 pounds of mix per square yard for Type B and 18 to 22 pounds per square yard for Type C.

Where neither rutfilling nor leveling is used, the mix application rates shall be 18 to 22 pounds per square yard for Type B and 20 to 24 pounds per square yard for Type C.

The Contractor shall provide to the Engineer aggregate weight tickets, a daily delivery summary, and an estimate of aggregate lost and otherwise not used in the work for each stockpile location (rutfilling aggregate shall be stockpiled and inventoried separately). When disagreements occur, the Engineer will make the final determination of such loss.

D. **Application**

The mixture shall be spread to fill minor cracks and shallow potholes and leave a high-skid resistant surface uniform in texture and appearance. Longitudinal joints shall not overlap more than four inches, except on irregular roadway widths when approved by the Engineer; however the joints shall be neat in appearance. Pavement edges shall be reasonably straight and shall be tapered to tie in neatly at gutters, entrances, and connections. When possible, longitudinal joints shall be placed on lane lines.

During night paving operations sufficient lighting shall be provided by the Contractor to insure proper application of micro-surfacing.

Rutfilling must be compacted by traffic or by a minimum of three passes with a pneumatic tire roller not in excess of 5 miles per hour (mph) prior to application of the surface course and must be cured such that applied material is totally free of detectable water. Rutfilling or scratch courses placed at night shall not be overlaid the same night or until such time that the materials totally free of detectable water.

Any oversized aggregate or foreign materials shall be screened from the aggregate stockpile prior to delivery to the mixing machine. A mixing aid additive shall be used to accommodate spreading due to slow placements or high temperatures. Additionally, water in a very limited quantity may be sprayed into the sprayed box to prevent build-up on the blades. All excess material shall be removed immediately from the ends of each run. Loose aggregate that is determined to be objectionable by the Engineer shall be immediately removed without damaging the surface.

Based upon a visual examination or test results the Engineer may reject any work due to poor workmanship, loss of texture, raveling or apparent instability.

The entire area specified shall be treated and the contract quantity shall not be exceeded.

E. Test requirements

Samples representing a maximum of 500 tons will be taken from material produced by each mixing unit for asphalt content determination. The residual asphalt content of such samples shall be within plus or minus 1.5 percent of the approved job mix. When successive tests from a mixing unit fail or one test fails by more than two percent, that unit shall be removed from service until approved by the Engineer.

F. Price Adjustment

Emulsified asphalt certified weight tickets showing the residual asphalt content shall be provided to the Engineer. Asphalt not used shall be documented and considered in determining the percent of asphalt used on the total project. Upon completion of the project, the percent of asphalt shall be determined by dividing the calculated weight of residual asphalt by the delivery ticket weight of aggregate used in the work. A one percent reduction in the unit price per ton will be applied for each one tenth of a percent the residual asphalt content is more than one percent below the approved job mix formula.

The price adjustment will be applied to the total tons for which payment is made.

G. Weather Limitations

Micro-surfacing shall not be applied on surfaces containing puddle water and on surfaces less than 50 degrees F, except that in the early morning the minimum surface temperature may be 40 degrees F provided the ambient temperature is expected to be above 60 degrees F and there is no forecast of ambient temperature below 32 degrees F within 24 hours from the time the material is applied.

H. Personnel

The Contractor shall have a Department certified Slurry Surfacing Technician on the job site to control the work.

VI. MEASUREMENT AND PAYMENT

The quantity of latex modified emulsion treatment used in the accepted portions of the work will be measured by net ticket weight of aggregate, latex modified emulsion and mineral filler delivered and incorporated in the accepted work. No deduction will be made for moisture naturally occurring in the aggregate and mineral filler.

The accepted quantity of **latex modified emulsion rutfilling** will be paid for at the contract unit price per ton.

The accepted quantity of **latex modified emulsion treatment** will be paid for at the contract unit price per ton for the type material specified.

Payment will be made under:

Pay Item	Pay Unit
Latex modified emulsion rutfilling	Ton
*Latex modified emulsion treatment, (Type)	Ton

*(For asphalt schedule work projects the leveling and surfacing courses are shown as separate line items in the schedule of work but combine into one bid item in the schedule of items.)

GUIDELINES – ASPHALT SURFACE TREATMENT PROJECTS**S314CM1-1109****VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ASPHALT SURFACE TREATMENT**

November 6, 2009

I. DESCRIPTION

This work shall consist of the application of a single or multiple course of asphalt surface treatment in accordance with the Specifications and as specified herein.

II. DEFINITION OF TERMS

Seal Treatment is defined as one application of asphalt material and one application of cover aggregate.

Modified Single Seal is defined as two applications of asphalt material, one application of cover aggregate and one application of blot fine aggregate.

Modified Double Seal is defined as three applications of asphalt material, two applications of cover aggregate and one application of blot fine aggregate.

III. MATERIALS

The Contractor shall demonstrate the compatibility of the asphalt emulsion and cover aggregate (excluding the blot seal) prior to construction of the surface treatment. This testing shall be conducted in accordance with VTM-65 in the presence of the Engineer for each asphalt and aggregate combination. In addition, the Contractor shall conduct the compatibility test at least once a week on stockpiled materials and any additional test, as deemed necessary by the Engineer. Compatibility test results shall be submitted to the Engineer. All material combinations shall pass the compatibility test unless waived in writing by the Engineer.

If during the life of this project excessive loss of cover aggregate occurs, the Engineer may suspend the work in accordance with the requirements of Section 108 of the Specifications until the cause of the loss of cover material is corrected.

(a) **Asphalt Materials** shall conform to Section 210 of the Specifications except as specified herein.

CRS-2 shall be a rapid setting cationic emulsified asphalt when tested in accordance with ASHTO T59 Testing Emulsified Asphalt. CRS-2 shall meet the requirements of Type II coating ability.

CRS-2h shall conform to CRS-2 except that the penetration shall be 40 to 100.

RC-250 when permitted during the period of May 1 to October 1 shall meet the requirements of Type I coating ability. When permitted during the period of October 1 to May 1 the requirements of Type II coating ability shall apply.

CRS-2L (Latex Modified Asphalt) shall meet the physical requirements of asphalt material Type CRS-2, as modified herein. A minimum of 2.5 percent (by weight) of

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

styrene-butadiene rubber (SBR) solids shall be incorporated into the emulsified asphalt. The latex modified emulsified asphalt shall be homogeneous and shall conform to the following requirements:

TESTS	Min.	Max.
Visc., Saybolt Furol, 122° F, sec.	100	400
Storage Stability Test, 24 hour, %	-	1.0
Classification Test	Passes	-
Particle Charge Test	Positive	-
Sieve test, 20 mesh, %	-	0.2
Distillation:		
Oil distillate, by vol. of emulsion, %	-	3
Residue, %	65	-
Tests on Residue from Distillation:		
Penetration, 77° F, 100 g., 5 sec.	100	250
Ductility, 77° F, 5 cm/minute, cm	100	-
Softening Point, °F, (AASHTO T 53-89)	100	-
*Elastic Recovery	50	-

*Elastic Recovery Test: Condition the ductilometer and samples to be treated at 50 degrees F. Prepare the brass plate, mold and briquette specimen in accordance with AASHTO T51. The molds shall be the non-tapered type used for Force Ductility Testing. Keep the specimen at the specified test temperature of 50 degrees F for 85-90 minutes. Immediately after conditioning, place the specimen in the ductilometer and proceed to elongate the sample to 20 cm at a rate of pull of 5 cm per minute. After the 20 cm elongation has been reached, stop the ductilometer and hold the sample in its elongated position for five minutes. After five minutes, clip the sample approximately in half by means of scissors or other suitable cutting device. Let the sample remain in the ductilometer in an undisturbed condition for one hour. At the end of this time period, retract the half sample specimen until the two broken ends touch. At this point note the elongation (E) in cm. Calculate the percent recovery by the following formula:

$$\% \text{ recovery} = \frac{20 - E}{20} \times 100$$

Modifiers shall not be post-added to the finished emulsion. All modifiers shall be incorporated, during the milling process (co-milled) at the manufacturing facility.

The Contractor shall provide written certification of the test results.

- (b) **Cover Material** — Coarse and Fine aggregate shall conform to Section 203 and 202 of the Specifications. Coarse aggregate shall be a minimum Grade B. Lightweight aggregate shall conform to the requirements of Section 206 of the Specifications except as noted herein. For light weight aggregate when the material passing the No. 200 sieve by washing is dust of fracture, the percentage of deleterious material shall not exceed 1.7 percent. Crushed stone shall only be used on roads of Traffic Groups VI and above unless the surface treatment consists of modified single seal treatment or modified double seal treatment. Aggregates shall not be used within 24 hours of washing. Aggregate from more than one source shall not be furnished for a specified route or a group of sub-division routes unless permitted by the Engineer.

The following modifies the aggregate material as defined in Section 203 of the Specifications:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

Designation	Modification
N	Non-polishing material only
L	Lightweight
G	Washed gravel only

Notes: Where 8N is specified, it shall meet the gradation requirements of No. 8P.
Where 8L is specified it shall meet the following gradation:

Sieve Size	Percent Passing
1/2	100
3/8	75-100
No. 4	10-40
No. 8	max. 5

Where 8G is specified, it shall meet the gradation requirements of No. 8P.

IV. PROCEDURES

Weather limitations for asphalt surface treatment work shall be in accordance with the requirements of Section 314 of the Specifications. The Contractor shall have a certified Surface Treatment Technician present during the surface treatment operation.

The Contractor shall use one steel wheel roller and one pneumatic-tire roller on modified single seal, modified double seal and seal treatments using CRS-2L asphalt material in a sequence approved by the Engineer. The Contractor is directed to the exceptions to these requirements found in IV.(c) of this special provision. These treatments shall be subjected to a minimum of one complete pass of each type of roller on either the cover aggregate or the blot seal coat.

- (a) **Seal Treatment** shall conform to the requirements of Section 312 of the Specifications. When seal treatment is specified, the Contractor shall protect the cover aggregate from traffic until the asphalt material has sufficiently cured to carry traffic without damage to the treatment.

The rate of application shall be in accordance with VTM-66. The rate of application for the cover aggregate and asphalt emulsion shown in the contract are approximate and the actual rate shall be determined by the Contractor and approved by the Engineer.

After the roadway has been treated and cured, the Contractor shall lightly broom the surface to remove any excessive aggregate in accordance with the requirements of Section 312.04 of the Specifications and as directed by the Engineer. Brooming shall be performed in such a manner as not to damage the embedded aggregate material.

- (b) **Modified Single Seal and Modified Double Seal Treatments**, when specified, shall be lightly broomed on the surface by the Contractor to remove any excessive aggregate in accordance with the requirements of Section 312.04 of the Specifications and as directed by the Engineer. Brooming shall be performed in such a manner as not to damage the embedded aggregate material.

No traffic, including delivery trucks, shall be allowed on modified seal treatments until after the blot coat material has been placed and rolled.

1. **Modified Single Seal Treatment**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

- a. Approximately 0.17 gallons per square yard of asphalt material, of the type specified, shall be applied to the existing surface immediately followed by an application of approximately 15 pounds per square yard of aggregate size No. 8P. The aggregate shall be spread uniformly (one aggregate deep) over the treated surface.

The aggregate shall be rolled immediately at least once with a self-propelled roller of an approved design. When a continuous uninterrupted modified single seal treatment train method is employed, rolling of the initial aggregate course may be omitted.

- b. Immediately after the seal coat has been rolled in accordance with IV.(b)1.a., herein a blot seal coat consisting of approximately 0.15 gallons per square yard of asphalt material, of the type specified, shall be applied to the surface treated pavement followed by a uniform application of approximately 10 pounds per square yard of fine aggregate. The fine aggregate shall be Grading A, B or F natural or manufactured in accordance with Section 202 or No. 9 aggregate in accordance with Section 203 of the Specifications, except that the material shall have no more than 5 percent passing the No. 200 sieve by washed analysis. The Contractor is directed to the exceptions to these requirements found in IV.(c) of this special provision. An increase in the application rate for blotter material may be necessary when using natural sand and if the desired results are not achieved with this material, the Engineer may require the use of manufactured sand. Fine aggregate from more than one source shall not be used intermittently. The fine aggregate shall be applied by the use of a self-propelled aggregate spreader of approved design. The blot coat shall be rolled immediately at least once with a self-propelled roller of an approved design. At least 48 hours after the blot coat application, the roadway surface shall be lightly broomed as directed by the Engineer.

2. **Modified Double Seal Treatment**

- a. Two applications of asphalt material and cover aggregate shall be applied in accordance with Section IV.(b)1.a. herein, except that at least one complete pass shall be made with the roller after each aggregate application.
- b. A blot coat shall be applied in accordance with IV.(b)1.b. herein.

The application temperature for liquid asphalt material shall conform to Table III-1 of Section 310 of the Specifications, except that the minimum application temperature for CRS-2 and CRS-2L shall be 160 degrees F.

(c) **District-Specific Exceptions for Modified Single Seal and Modified Double Seal Treatments and Seal Treatment**

Bristol District — The blot coat for use in modified single seal and modified double seal shall be No. 9 aggregate conforming to Section 203 of the Specifications and applied at a rate of 12 pounds per square yard in lieu of sand. Two pneumatic-tire rollers shall be used on modified single seal, modified double seal and seal treatments using CRS-2L asphalt material.

Lynchburg, Salem, and Staunton Districts — The blot coat for use in modified single seal and modified double seal shall be No. 9 aggregate conforming to Section 203 of the Specifications and applied at a rate of 12 pounds per square yard in lieu of sand.

Hampton Roads District — The blot coat for use in modified single seal and modified double seal shall be manufactured sand only conforming to Section 202 of the Specifications.

- (d) **Prime Coat**, when specified, shall be applied in accordance with Section 311 of the Specifications. When cover material is specified, rolling shall be performed in accordance with the requirements of Section 312 of the Specifications.

The prime coat shall be permitted to cure prior to the next application of asphalt.

During the period between application of the prime coat and the seal coat, the primed surface shall be kept in repair. Holes, ravels, and areas deficient in primer shall be patched and repaired with asphalt-treated materials by penetration methods or other approved procedures.

- (e) **Maintenance, Protection and Performance of the Work** — The Contractor shall be responsible for the maintenance and protection of the seal treatment on the roadway for a period of 48 hours after application.

The Contractor shall exercise control of the delivery and application of the surface treatment materials to prevent damage to the roadway surface. The speed of the delivery equipment and pilot truck shall be limited to a maximum 15 miles per hour. The maintenance and protection shall include, but not be limited to, the placement of signs; the use of flaggers and pilot trucks; and placement of additional asphalt and aggregate material. In the event a failure occurs prior to acceptance, the Contractor shall repair or replace the failed treatment as directed by the Engineer, at no additional cost to the Department.

V. EQUIPMENT

(a) Asphalt Distributors and Aggregate Spreaders

1. Distributors and spreaders shall be calibrated by the Contractor in the presence of the Engineer prior to placing surface treatment; to ensure an even and accurate spray, and aggregate distribution.
2. Asphalt distributors shall be equipped with proper spray nozzles including end nozzles for the application rate specified, to provide uniform coverage throughout the width of the application.

(b) Rollers

1. One steel wheel roller and one pneumatic-tire roller shall be used on modified single seal, modified double seal and seal treatment using CRS-2L asphalt material. The Contractor is directed to the exceptions to these requirements found in IV.(c) of this special provision. The steel wheel roller weight shall be between 6 and 8 tons for the tandem type and between 8 and 10 tons for the three-wheel type.
2. Two pneumatic-tire rollers shall be used on the conventional type seal treatment.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

VI. MEASUREMENT AND PAYMENT

Liquid asphalt material for seal treatment will be measured and paid for in accordance with Section 312 of the Specifications.

Aggregate for seal treatment will be measured and paid for in square yards on a plan quantity basis, which price bid shall include furnishing and applying aggregate, protection of the asphalt surface treatment and all incidentals necessary to complete the work. Authorized increases or decreases to the plan quantity will be adjusted in accordance with Section 109 of the Specifications.

Modified single seal and **modified double seal** treatments will be measured and paid for in square yard on a plan quantity basis, which price bid shall include all cost for furnishing and applying liquid asphalt material and cover aggregate, protection of the asphalt surface treatment and all incidentals necessary to complete the work. Authorized increases and decreases to the plan quantities will be adjusted in accordance with Section 109 of the Specifications.

Brooming shall be included in the price bid for other appropriate items.

Payment will be made under:

Pay Item	Pay Unit
Aggregate (type)	Square Yard
Modified Single Seal	Square Yard
Modified Double Seal	Square Yard 16162

GUIDELINES – ASPHALT SURFACE TREATMENT PROJECTS**S314DM1-1109**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
MACRO-TEXTURE SURFACE TREATMENT

November 6, 2009

I. DESCRIPTION

This work shall consist of the production and placement of a polymer modified macro-texture surface treatment in accordance with the Contract, as specified herein, and as directed by the Engineer.

II. MATERIALS

- A. Asphalt:** The asphalt emulsion shall be polymer modified conforming to the requirements of Section 210 of the Specifications except as noted herein:

Tests	Method	Minimum	Maximum
Sieve Test, 20 mesh, percent	AASHTO T 59		0.5
Storage Stability Test, 24 hour, percent	AASHTO T 59		1.0
Viscosity, Sayboul Furo @ 122°F, sec.	AASHTO T 59	50	600
Particle Charge	AASHTO T 59	Positive	
Classification Test	AASHTO T 59	Pass	
Distillation:			
Oil distillate by volume of emulsion, percent	AASHTO T 55		2
Residue from distillation, percent	Note 1	65	
Tests on Residue from Distillation:			
Penetration, 77°F, 100g., 5 sec.	AASHTO T 59	60	140
Ductility, 39.2°F, 5cm/min., cm	AASHTO T 51	30	
Softening Point, Ring & Ball, degrees F	AASHTO T 53	38	
Elastic Recovery, 50°F	Note 2	60	
Note 1: AASHTO T 59 modified to maintain a 350°F maximum temperature for 15 minutes.			

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



Note 2: AASHTO T 301 Elastic Recovery Test: Condition the ductilometer and samples to be treated at 50°F. Prepare the brass plate, mold and briquette specimen in accordance with AASHTO T 51. The molds shall be the non-tapered type used for Force Ductility Testing. Keep the specimen at the specified test temperature for 85-90 minutes. Immediately after conditioning, place the specimen in the ductilometer and proceed to elongate the sample to 20 cm at a rate of pull of 5cm/min. After the 20 cm elongation has been reached, stop the ductilometer and hold the sample in it's elongated position for five minutes. After five minutes, clip the sample approximately in half by means of scissors or other suitable cutting device. Let the sample remain in the ductilometer in an undisturbed condition for one hour. At the end of this time period, retract the half sample specimen until the two broken ends touch. At this point note the elongation (E) in cm. Calculate the percent recovery by the following formula:

$$\% \text{ Recovery} = \frac{20 - E}{20} \times 100$$

Modifiers shall not be post-added to the finished emulsion. All modifiers shall be incorporated into the base asphalt prior to the emulsification process at the manufacturing facility. The emulsion, upon standing undisturbed for a period of 24 hours shall show no milky white colored substance on its surface. It shall have a homogeneous brown color throughout. The emulsion used for the sweep test shall be the same as that used on the jobsite.

B. Aggregate: Aggregate shall conform to the requirements of Section 203 of the Specifications except as noted herein.

1. All aggregate shall be crushed.
2. Moisture shall be maintained so that the surface is visibly moist by using methods as needed. The aggregate shall not be excessively moistened. If water is free draining from aggregate haul trucks, moisture will be considered excessive.
3. Fractured Faces – (ASTM D 5821)

One Fractured Face	98% minimum
Two or more Fractured Faces	95% minimum
4. Flakiness Index – (FLH T 508) 17% maximum
Federal Land Highways (FLH) Test Method T 508
5. Grading – (AASHTO T 27)

<u>Sieve Size</u>	<u>Percent Passing</u>
1/2 inch	100
3/8 inch	90-100
No. 4	12 max.
No. 200	1.0 max.

C. Macro-Texture Surfacing Design. At least 3 weeks before beginning this work, the Contractor shall submit a macro-surfacing wearing course design to the Engineer for review. The Contractor shall indicate on the design all material sources, emulsion and aggregate application rates, and certify that the emulsion and aggregate, when tested in accordance with the Macro-Surfacing Sweep Test available from the Central Office

Materials Division, Pavement Design and Evaluation Section, results in a maximum aggregate mass loss equal to or less than 15 percent.

III. PROCEDURES

- A. **Weather Limitations** shall conform to Section 314.03 of the Specifications.
- B. **Surface Preparation:** Immediately prior to application of the macro-surfacing wearing course, clean the surface of vegetation, loose materials, dirt, mud, and other objectionable items. When sealing open cracks any over-banding of crack sealant shall not be left on either side of the crack. Thermoplastic and tape pavement markings shall be removed prior to placement. Protect existing raised/recessed pavement markers by methods acceptable to the Engineer.
- C. **Macro-Texture Application:** Emulsion and aggregate shall be uniformly applied in a continuous variable width. Emulsion shall be applied with a self-propelled, front feed, continuous-loading vehicle. Emulsion shall be applied so that no more than 48 inches of emulsion is exposed without aggregate cover. The Contractor shall apply both the emulsion and aggregates in a single pass within ± 10 percent of the design application rates. Damp or moist aggregates may be used if no free water is evident in the support vehicles.

The emulsion shall be maintained at a minimum temperature of 140 degrees F in the transport vehicles. No emulsion shall be stored in the application or support units overnight. Material not used within 48 hours of initial delivery to the job site shall be returned to the production facility at no additional cost to the Department.

Transfer of emulsion and aggregates shall be done without spillage. Immediately stop application of the macro-texture if spillage occurs and remove the loose aggregate and/or emulsion.

The Contractor shall daily provide the Engineer with the gallons of emulsion applied and tons of aggregate and the area covered at the end of each day's work.

For inaccessible areas, portable pressurized units shall be used to spray the emulsion uniformly over the surface. Gage quantity of material placed at one time, according to facilities for handling, spreading, and rolling coarse aggregate, as well as the temperature of the surface and the bituminous material. Insure uniformity at the junction of the two applications both transversely and longitudinally.

Within 2 minutes of application, roll the entire surface of the macro-texture wearing course with a minimum of one pass of a roller. Use a sufficient number of rollers to keep pace with the continuous application operation. Complete additional passes of the roller, as needed, within 10 minutes of application.

Complete all rolling before sweeping. Use a sufficient number of sweepers to keep pace with the continuous application operation. When the surface temperature is less than 125 degrees F and the relative humidity no more than 75 percent, sweep the entire surface of the macro-texture to remove excess aggregate, without damage, within 1 hour after application. When the surface temperature is greater than 125 degrees F and the relative humidity is greater than 75 percent, sweep the macro-texture to remove excess aggregate when recommended by the bituminous material producer. Sweep the entire surface of the macro-texture a minimum of three times.

IV. PROTECTION OF SURFACE

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

Traffic will not be allowed on the newly completed surface until adequate stability and adhesion has been attained and the material is sufficiently cured to prevent distortion, flushing of bituminous material to the surface, or loss of aggregate. Do not allow vehicular traffic on the newly completed surface until excess aggregate is removed.

V. EQUIPMENT

- A. Asphalt Distributor:** Shall be calibrated by the Contractor in the presence of the Engineer prior to placement to ensure an even and accurate spray. Calibration will be considered acceptable when the spray rate is within 0.02 gallon per square yard of the design application rate.

The asphalt distributor shall have an insulated tank with access for cleaning, a functional volume measuring device or calibrated tank, and a thermometer for measuring emulsion temperature in the tank. It shall have dual, full circulation spray bars that are adjustable laterally and vertically and spray nozzles, including end nozzles that have individual control valves for adjustment. The asphalt distributor shall be capable of synchronizing the emulsion spray bar width to the aggregate spreader width to prevent exposed emulsion.

- B. Aggregate Distributor:** Shall be calibrated by the Contractor in the presence of the Engineer prior to placement to ensure an even and accurate distribution of material. Calibration will be considered acceptable when the application rate is within 1.0 pound per square yard of the design application rate.

The aggregate distributor shall have an integrated, aggregate hopper and variable width spreader, including power-driven augers and spread rolls to uniformly deliver the aggregate to the spreader gate openings. It shall also have a continuous conveyor to feed the hopper, and full-width screen to reject oversize aggregate and foreign objects from entering the hopper.

- C. Rollers:** The Contractor shall use either a steel wheel or pneumatic-tire roller or combination of rollers to seat the aggregate. The pneumatic-tire roller shall have a minimum contact pressure of 80 pounds per square inch and maximum speed of 5 miles per hour. The steel wheel roller weight shall be between 6 and 8 tons for the tandem type.
- D. Sweeper:** Shall be vehicle mounted with variable speed, angle, and contact pressure. Sweepers shall have rotary brooms with bristles of not less than 5 inches in length. Other types of sweeping devices may be used if acceptable to the Engineer. No sweeping vehicles equipped with tractor tires shall be used.
- E. Support Vehicles:** Use support vehicles as necessary to continuously load emulsion and aggregates to allow for a continuous, non-stop operation.
- F. Flagger Service and Pilot Vehicles:** When needed, the Contractor shall provide in accordance with Section 512 of the Specifications.

VI. TEST SECTION

At the start of this work, unless waived by the Engineer, the Contractor shall construct at least a 400-foot test section at no cost to the Department. Construct the test section at a location designated by the Engineer. Construct the test section using the same equipment, and the same material sources and application rates indicated on the design and that will be used on the project. During construction of the test section, demonstrate that the macro-texture wearing

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

course is capable of final sweeping, without damage, within one hour after application. If the demonstration is unsuccessful, corrective actions shall be taken until results are acceptable to the Engineer. Additional test section(s) shall be placed at no cost to the Department until the demonstration is satisfactory to the Engineer.

VII. DEFECTIVE WORK

Where the Engineer deems work defective, the Contractor shall remove and replace, apply additional applications of macro-texture, or repair such areas using methods acceptable to the Engineer at no cost to the Department.

VIII. MEASUREMENT AND PAYMENT

Macro-texture surface treatment will be measured and paid for at the contract unit price per square yard on a plan quantity basis, complete-in-place, which price bid shall include furnishing and applying aggregate and modified polymer asphalt emulsion, protection of the macro-texture surface treatment and all incidentals necessary to complete the work.

Sweeping shall be included in the price bid for other appropriate items.

Pay Item	Pay Unit
Macro-Texture Surface Treatment	Square Yard

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY).**S315LM0-0609**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SURFACE PREPARATION AND RESTORATION PRIOR TO PLANT MIX OVERLAY
(Maintenance)

October 23, 2008

I. DESCRIPTION

This work shall consist of removing deteriorated pavement, cleaning the area and repairing with the appropriate asphalt mixes in areas designated by the Engineer. This work is applicable only to the routes or areas designated to be overlaid in this contract and where the Engineer has authorized the limits for preparation and restoration. This preparation and restoration will be accomplished prior to the overlay paving operation. After the preparation, the Contractor will be responsible for maintaining the prepared surface until the overlay has been completed.

Definitions: For the purpose of the Specifications surface preparation is defined as the following:

TYPE I - A localized disintegration of the pavement, including distorted areas, no more than 5 inches in depth and no more than 20 square feet in surface area.

TYPE II - A localized disintegration of pavement, including distorted areas, no more than 5 inches in depth and more than 20 square feet in surface area.

TYPE III - A localized disintegration more than 5 inches in depth, limits of surface area as defined by the Engineer.

II. MATERIALS

Surface preparation and restoration material shall be as follows:

For 0-2 inches - use surface mix

For 2-5 inches - use intermediate mix

For greater than 5 inches - use base mix or intermediate mix

Tack coat shall conform to the requirements of Section 210 of the Specifications.

III. PROCEDURES

The Engineer will designate the limits of surface area for preparation and restoration to be achieved prior to beginning the work.

Areas designated for surface preparation and restoration shall be thoroughly cleaned, unsuitable material removed and edges shaped to vertical sides prior to applying tack coat.

A tack coat shall be applied to all exposed surfaces of the area which will receive asphalt material.

The Contractor shall utilize the mix and type of asphalt for surface preparation and restoration in accordance with Section II Materials that he shall use with that route's overlay. Asphalt material shall be

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

placed in lifts of no more than 3 inches in depth. After leveling each lift, it shall be compacted with an approved mechanical tamper or other approved method. Care shall be taken to ensure the surface of the finished repaired area conforms to the grade of the surrounding pavement.

Maintaining traffic for **Surface Preparation and Restoration** shall be in accordance with the requirements in the Special Provision for **SECTION 512—MAINTAINING TRAFFIC (Asphalt Maintenance Schedules)**.

IV. MEASUREMENT AND PAYMENT

Surface Preparation and Restoration Type I will be measured in tons of asphalt material and paid for at the rate of three times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include removing and disposing of unsuitable material, preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

Surface Preparation and Restoration Type II will be measured in tons of asphalt material and paid for at the rate of four times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include removing and disposing of unsuitable material, preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

Surface Preparation and Restoration Type III will be measured in tons of asphalt material and paid for at the rate of five times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include removing and disposing of unsuitable material, preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

Measurement and payment for maintaining traffic for **Surface Preparation and Restoration Type I, II, and III** shall be in accordance with the requirements in the Special Provision for **SECTION 512—MAINTAINING TRAFFIC (Asphalt Maintenance Schedules)**.

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY) WHERE REQUIRED.**S315MM0-0609**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SEALING CRACKS IN ASPHALT CONCRETE PAVEMENTS PRIOR TO OVERLAY

October 2, 2008

I. DESCRIPTION

This work shall consist of the cleaning, filling and sealing cracks in asphalt pavement joints or cracks that will be overlaid with hot mix asphalt. The Engineer will designate which sites will receive each material. This work shall include the cleaning and sealing of cracks in existing asphalt concrete pavements including but not limited to cracks along the longitudinal joint(s) between lanes. Cracks ranging in width from 1/4 inch to 1½ inches shall be sealed. Areas exhibiting severe map or alligator cracking and/or requiring major patching, or cracks that exceed 1½ inches in width shall not be included in this work.

II. MATERIALS

All sealant materials shall be certified or tested and approved by the Engineer before being incorporated into the work. The Contractor shall furnish a complete written statement of the origin, composition, and manufacture of all materials that are to be used in the work. Where installation procedures or any part thereof are required to be in accordance with recommendations of the manufacturer of sealant compounds, the Contractor shall submit catalogue data and copies of recommendations to the Engineer prior to installation of the materials. All such recommendations shall be adhered to unless directed otherwise by the Engineer.

The material shall consist of PG 70-22 and polyester fibers from the Department Materials Division *MANUAL OF INSTRUCTIONS* approved list of Stabilizers for Asphalt Mixtures (fibers only) at 5 percent by weight.

The sealant shall be free of foreign matter and free of lumps when melted or applied. Additives to prevent tracking shall be employed if required and the sealant shall have a no-pickup time of 10 minutes at 77 degrees F.

III. EQUIPMENT

Proper sealing equipment must be used for the specific material listed in accordance with the manufacturer's recommendations. The equipment for hot applied sealant compounds shall be a melting kettle of double boiler, indirect heating type, using oil as a heat-transfer medium. The kettle shall have an effective mechanically operated agitator, a re-circulation pump and shall be equipped with a positive thermostatic temperature control which shall be checked for calibration before beginning work. The unit shall be capable of maintaining the specified mixing temperature within 10 degrees F. Manufacturer's recommendations for mixing and application temperatures shall be followed with the latter being measured at the nozzle of the applicator wand. Overheating or direct heating of the sealant material shall not be permitted. The hoses, connectors and applicator wand shall all be insulated.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

IV. PROCEDURES

The sealant shall not be placed when the ambient or pavement temperatures fall below 45 degrees F, or when moisture is present in the crack to be sealed.

Prior to sealing, cracks shall be thoroughly cleaned as approved by the Engineer using an oil free hot air blasting heat lance capable of a velocity of 3000 feet-per-second (fps) at 3000 degrees F. Cracks shall be cleaned such that all dirt, debris, moisture and other foreign materials that will prevent bonding of the sealant are removed to a minimum depth of one inch. All dirt and debris shall be removed from the pavement to prevent recontamination of the crack. Cracks shall be completely dry before sealing. Any crack not meeting the approval of the Engineer shall be re-cleaned and dried. The sealant shall be pumped directly into the crack from the heater-melter unit at the temperature specified by the manufacturer **immediately following the cleaning of each crack**. Cracks shall be sealed in the following manner as approved by the Engineer:

- Cracks shall be filled from the bottom up in a continuous manner such that the crack is completely filled, level with the pavement surface, and the sealant shall overlay the crack at the pavement surface without overbanding. The material shall not continue to flow beyond these limits once a crack is sealed. The height of the sealant above the pavement surface shall not exceed 1/8 inch. For this method of sealing, the applicator wand shall be equipped with a shoe that will produce the extruded over-band as well as completely fill the crack.

The applicator wand shall be returned to the mixing unit and the sealant material recirculated immediately upon completion of each crack sealing.

Sealant that has been overheated, subjected to heating for more than 4 hours or any amount of sealant that remains in the applicator at the end of the day's operation shall be withdrawn and wasted. Prior to the start of each day's operation, the Contractor shall withdraw approximately one gallon of sealant from the applicator to be considered as waste material.

Any crack, which cannot be filled due to the sealant draining into a large void, shall be plugged with sand, No. 10 aggregate or other suitable material such as backer rod, approved by the Engineer, and then filled. After plugging, recleaning of the crack may be required prior to filling with sealant.

Traffic shall be kept off the pavement surface until the crack sealant has cured to the point that it will not track or be distorted by traffic.

The Contractor shall replace, at his or her expense, any sealant that pulls out within 96 hours after opening the pavement to traffic.

V. MEASUREMENT AND PAYMENT

Crack sealant/filler for cracks or joints will be measured and paid for at the contract unit price per pound. This price shall be full compensation for the sealant/filler complete in place, including cleaning and sealing the cracks and for all incidentals necessary to complete the work.

At the beginning of each workday, the Engineer, shall measure the amount of material in the heater-melter unit and log all additional material added during the day, and measure the amount of material remaining in the heater-melter to determine the total poundage used for that day. No payment will be made for waste material.

For the purpose of converting the liquid material in the heater-melter unit from gallons to pounds, the Contractor shall use a calibrated measuring rod to determine the actual quantity of material in gallons,

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

and same shall be converted to pounds taking into consideration the temperature of the material at the time of measurement. A chart or other approved conversion method furnished by the sealant material manufacturer/supplier shall be used to perform the conversion from gallons to pounds.

Payment will be made under:

Pay Item	Pay Unit
Crack Sealant/Filler	Pound

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY). WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: S515B00 Cold Planing Asphalt Operations, SS51502 Planing or Milling Pavement, S315LM0 Sur Prep-Restore -Before Overlay, S315MM0 Seal Asphalt Crack -Before Overlay, S315QM0 Mainline Overlay Limits at Intersect.

S315NM0-0609

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PLACEMENT OF HOT MIX ASPHALT OVERLAYS
(Asphalt Maintenance)

October 21, 2008c

I. DESCRIPTION

This work shall consist of furnishing and placing Hot Mix Asphalt overlay pavement courses on existing roadway surfaces in accordance with the requirements herein and in conformity with the lines, grades, and thickness as established in the Contract or as directed by the Engineer. This work shall be performed in accordance with the requirements of Section 211 and Section 315 of the Specifications and, where Stone Matrix Asphalt (SMA) is specified in the Contract, Sections 248 and 317 of the Specifications.

II. EQUIPMENT

Equipment for placing asphalt overlay material shall be in accordance with the requirements of Section 315.03 of the Specifications and where Stone Matrix Asphalt (SMA) is specified, Section 317 of the Specifications.

III. PROCEDURES

Where pavement planing is required it shall be in accordance with the requirements of the **Special Provision For Planing Asphalt Concrete Pavement (Maintenance)**.

Limitations of operations for placing Hot Mix Asphalt overlay shall be in accordance with the requirements of Section 108.02 of the Specifications and as specified herein.

Prior to commencement of paving overlay operations the Contractor shall clean the existing pavement surface of all accumulated dust, mud, or other debris that may affect the bond of the new overlay to the satisfaction of the Engineer. The cost for cleaning and surface preparation shall be included in the bid price for hot mix asphalt concrete.

The following will be corrected by the Engineer ahead of the Contractor's operations or included in the work performed by the Contractor. When such corrective work is performed by the Contractor the work will be paid for as designated by the specific pay item in the Contract:

- Pavement irregularities greater than 1 inch in depth shall be filled with a material approved by the Engineer.
- Pavement cracks or joints 1/4 inch or more in width shall be cleaned and filled with a material approved by the Engineer without overbanding.

The Contractor shall remove all thermoplastic and tape pavement markings and raised pavement markers prior to performing paving overlay operations. All thermoplastic and tape pavement markings shall be 90 percent removed so as not to interfere with bonding of pavement overlay or transfer of marking thickness up through the overlay. In lieu of grinding to eradicate thermoplastic,

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

the Contractor will be permitted to mechanically scrape off thermoplastic markings to a point where such markings are flush with the existing pavement surface employing adequate controls so as not to damage the pavement. This work shall be performed in accordance with the requirements of Section 512 and Section 704 of the Specifications except as permitted herein.

Utility structures shall be protected and referenced prior to paving. This is for the purpose of locating and adjusting the utility structures after paving, if necessary. Such work shall be at no cost to the Department.

Temporary transverse pavement-wedge tie-ins shall be constructed where pavement overlay operations are temporarily halted as allowed or required herein, in Section 315 of the Specifications, elsewhere in the contract documents, or by the Engineer. Each tie-in shall be no less than 10 feet in length for every inch of depth of overlaid pavement and shall consist of a mix that is suitable for a riding surface that provides a smooth transition between overlaid existing pavement and existing pavement or bridge decks. Such tie-ins shall be constructed prior to the overlaid pavement being opened to traffic.

Final transverse pavement tie-ins shall be constructed to provide a smooth transition between new pavement and existing pavement or bridge decks. Such tie-ins shall conform to the requirements of Section 315.05(c) of the Specifications except that all joints at tie-in locations shall be tested using a 10-foot straightedge in accordance with the requirements of Section 315.07(a) of the Specifications. The variation from the testing edge of the straightedge between any two contact points with the pavement surface shall not exceed 1/4 inch. When planing is necessary at tie-ins to existing pavement or bridge decks to obtain the required overlay depth specified in the Contract; the existing pavement shall be planed in accordance with the requirements of the special provision mentioned herein.

The following restrictions, based on the type of roadway, shall apply:

A. Limited Access Roadways

The Contractor shall perform hot mix asphalt overlays to the depths identified for the specific routes identified in the Contract. Where hot mix asphalt is being overlaid to a depth of 2 inches or less on roadways carrying traffic, the Contractor shall have the option of squaring up the overlay operation at the end of each workday or squaring up all lanes, excluding shoulders, before the weekend. Shoulders must be squared up within 48 hours after the weekend and prior to continuing mainline paving. All lanes including shoulders must be squared up before holidays or any temporary shutdowns.

Where overlays of more than 2 inches are being placed the Contractor shall square up the overlay operation at the end of each workday. This requirement shall apply to both pavement and shoulders.

Asphalt pavement overlay operations shall be performed in only one traffic lane at a time. Under no circumstance will the Contractor be permitted to overlay a portion of the width of a travel lane, ramp or loop and leave it overnight.

Where uneven pavement joints exist either transversely or longitudinally at the edges of travel lanes due to the overlay operations, the Contractor shall provide advance warning traffic control devices to inform the traveling public in accordance with the details provided in the plans for the scope of overlay operation he is performing. The cost for such warning devices, signage and temporary pavement markings shall be included in the cost of other appropriate items.

In the event an emergency or unforeseen circumstances such as equipment failure or breakdown develops due to the Contractor's operations that prevent the Contractor from squaring up the

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

overlaid surface on adjacent lanes prior to a weekend or a holiday any additional signage required to protect the traveling public shall be the Contractor's expense.

Ramps and exits are to be paved so that a long longitudinal joint will not be left for vehicles to cross. Ramps and exits are to be paved to the extent that the joint crossed is transverse or the ramp is squared up with the adjacent mainline lane.

Only approved mixes that have been verified in accordance with the requirements of Section 211.03(f) of the Specifications and have met the requirement for roller pattern density shall be placed on limited access roadways.

The Contractor shall ensure positive drainage is provided for all overlaid surfaces in accordance with the requirements of Section 315.05(c) of the Specifications.

B. All Other Roadways

Where hot mix asphalt is being overlaid to a depth of 2 inches or less on roadways carrying traffic, the Contractor shall have the option of squaring up the overlay operation at the end of each workday or squaring up all lanes including shoulders at least once every 4 consecutive workdays excluding weekends. All lanes including shoulders must be squared up before holidays or any temporary shutdowns.

Where overlays of more than 2 inches are being placed the Contractor shall square up the overlay operation at the end of each workday. This requirement shall apply to both pavement and shoulders.

Asphalt pavement overlay operations shall be performed in only one traffic lane at a time. Under no circumstance will the Contractor be permitted to overlay a portion of the width of a travel lane, ramp or loop and leave it overnight.

Where uneven pavement joints exist either transversely or longitudinally at the edges of travel lanes due to the overlay operations, the Contractor shall provide advance warning traffic control devices at his expense to inform the traveling public in accordance with the details provided in the plans for the scope of overlay operation he is performing.

In the event an emergency or unforeseen circumstances such as equipment failure or breakdown develop due to the Contractor's operations that prevent the Contractor from squaring up the overlaid surface on adjacent lanes prior to a weekend or a holiday any additional signage required to protect the traveling public shall be the Contractor's expense.

Ramps and exits are to be paved so that a long longitudinal joint will not be left for vehicles to cross. Ramps and exits are to be paved to the extent that the joint crossed is transverse or the ramp is squared up with the adjacent mainline lane.

The Contractor shall ensure positive drainage is provided for all overlaid surfaces in accordance with the requirements of Section 315.05(c) of the Specifications.

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY). DO NOT USE STANDARD DRAWING WP-2 (PAGE 303.02 [INSERTABLE SHEET A187]) UNLESS SPECIFICALLY REQUESTED BY THE DISTRICT. ANY ADDITION OR VARIATION FROM THIS SPECIFICATION MUST BE SUBMITTED TO AND APPROVED BY THE STATE MATERIALS ENGINEER.

S315OM0-0609

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TRENCH WIDENING ASPHALT MIXTURES
BM-25.0(T), IM-19.0D(T) or IM-19.0A(T)

October 17, 2008c

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 315.01—Description is amended to include the following:

Certain routes in the Contract are designated to use asphalt concrete type **BM-25.0(T)**, **IM-19.0A(T)** or **IM-19.0D(T)**. Those routes are referred to herein as trench widening routes.

Section 315.02—Materials is amended to add the following:

- (e) **Trench widening route** materials shall conform to the requirements of Section 211 of the Specifications. IM-19.0A shall be used for **IM-19.0A(T)** and IM-19.0D shall be used for **IM-19.0D(T)**. Where **BM-25.0(T)** is designated, either BM-25.0A or BM-25.0D shall be used by the Contractor.

Section 315.05(e)2 Surface, Intermediate and Base Courses is amended to include the following:

Trench Widening Routes — The minimum lift density as determined in accordance with the requirements of VTM-22 is based on the type of trench widening as defined below and specified in the Contract. Where trench widening is 2 foot in width compaction may be performed with small single drum walk-behind rollers or other mechanical means acceptable to the Engineer at the Contractor's discretion.

Type 1 — Paved Shoulder Only:

Trench widening routes where the widening will serve as a paved shoulder and will not be subjected to constant traffic: The painted edge line will not be on the trench widening. The minimum density requirement will not be enforced. Steel double drum rollers weighing no less than 8 tons shall perform compaction of the hot mix asphalt. No less than five passes shall be completed.

Type 2 — Widened Travel Lane and Paved Shoulder:

Trench widening routes where the widening will serve as a wider travel lane and paved shoulder that will be subjected to traffic: The widening will not include removal of existing travel lane pavement, i.e., inside the edge line marking. The painted edge line will be on the trench widening. The minimum density of **91.5** percent shall be enforced.

Type 3 — Repaired Travel Lane and Paved Shoulder:

Trench widening routes where the widening will include a portion of the existing travel lane, serve as a paved shoulder and will be subjected to traffic as a part of

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

the travel lane: The widening will include removal of existing pavement (i.e. inside the edge line marking). The painted edge line will be on the trench widening. The minimum density of **91.5** percent will be enforced.

Where density requirements apply, the Contractor is responsible for cutting cores or sawing plugs for density testing. One set of plugs/cores per course of material shall be obtained within the first 500 linear feet and every 2,500 linear feet thereafter of the trench widening route for testing by the Contractor or the Department. Core/plug locations shall be randomly selected within each section. If the density achieved is less than **91.5** percent for the Type 2 or 3 trench widening routes, payment will be made on the theoretical tonnage within the 500 or 2,500 linear feet lot in accordance with the requirements of Table III-5 of the Specifications.

Section 315.05—Procedures is amended to include the following:

- (i) **Trench widening routes** shall be widened by trenching on one or both sides of the existing roadway and placing **BM-25.0(T)**, **IM-19.0A(T)** or **IM-19.0D(T)** commensurate with the required width and depth specified for that route.

Any remaining material, after final grading, shall be classified as excess material, and will be disposed of in accordance with the requirements of Section 106.04 of the Specifications or as directed by the Engineer.

The trench shall be shaped to have vertical sides, the width, depth and type as specified in the contract documents (2-foot minimum to 6-foot maximum width), be free of excess material, and shall be tacked against the existing pavement side before **BM-25.0(T)**, **IM-19.0D(T)** or **IM-19.0A(T)** is placed.

The Contractor shall ensure that disruption to driveways, entrances, mail boxes and intersections are minimized and that precautions are taken to ensure that roadway drainage does not pond on the roadway surface.

Section 315.08 Measurement and Payment is amended to include the following:

Asphalt Concrete Type BM-25.0(T), IM-19.0A(T) or IM-19.0D(T) will be measured in tons and will be paid for at the contract unit price per ton, which price bid shall include furnishing and placing the **BM-25.0(T)**, **IM-19.0A(T)** or **IM-19.0D(T)** mix, trenching, tack grading and disposal of excess material.

Payment will be made under:

Pay Item	Pay Unit
Asphalt Concrete Type BM-25.0(T)	Ton
Asphalt Concrete Type IM-19.0A(T)	Ton
Asphalt Concrete Type IM-19.0D(T)	Ton

GUIDELINES — ASPHALT MAINTENANCE PROJECTS (PLANT MIX ONLY)**S315QM0-0609**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
LIMITS OF MAINLINE OVERLAY AT INTERSECTIONS TO PAVED ROADS
(Asphalt Maintenance)

October 21, 2008c

I. DESCRIPTION

This work shall consist of furnishing and placing Hot Mix Asphalt overlay pavement courses on existing paved roadway surfaces that intersect the mainline roadway pavement overlay. This work shall be performed in accordance with the requirements of the Special Provision for Placement of Hot Mix Asphalt Overlays (Asphalt Maintenance), Sections 211 and 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Sections 248 and 317 of the Specifications; and as specified herein. Where pavement planing is required it shall be performed in accordance with the requirements of the Special Provision for Planing Asphalt Concrete Pavement (Asphalt Maintenance) and as specified herein.

II. MATERIALS

Materials shall be in accordance with the requirements of Section 211 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 248 of the Specifications; and the Special Provision for Placement of Hot Mix Asphalt Overlays (Asphalt Maintenance).

III. EQUIPMENT

Equipment for furnishing and placing asphalt overlay shall be in accordance with the requirements of Section 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 317 of the Specifications. Pavement planing equipment shall be in accordance with the requirements of the Special Provision for Planing Asphalt Concrete Pavement (Asphalt Maintenance).

IV. PROCEDURES

Furnishing and placing asphalt overlay shall be in accordance with the requirements of Section 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 317 of the Specifications. Where pavement planing is required, it shall be in accordance with the requirements of the Special Provision for Planing Asphalt Concrete Pavement (Asphalt Maintenance), and as specified herein.

The Contractor shall overlay the intersecting paved road from the edge of pavement of the mainline roadway pavement overlay to a point that includes the entire radius of the intersecting paved road in accordance with the attached drawing. This distance from the edge of pavement of the mainline roadway pavement overlay shall not exceed 50 feet measured in accordance with the drawing herein.

On curb and gutter sections where planing is required for the mainline roadway overlay, planing shall also be required on the intersecting paved road area prior to these areas being overlaid.

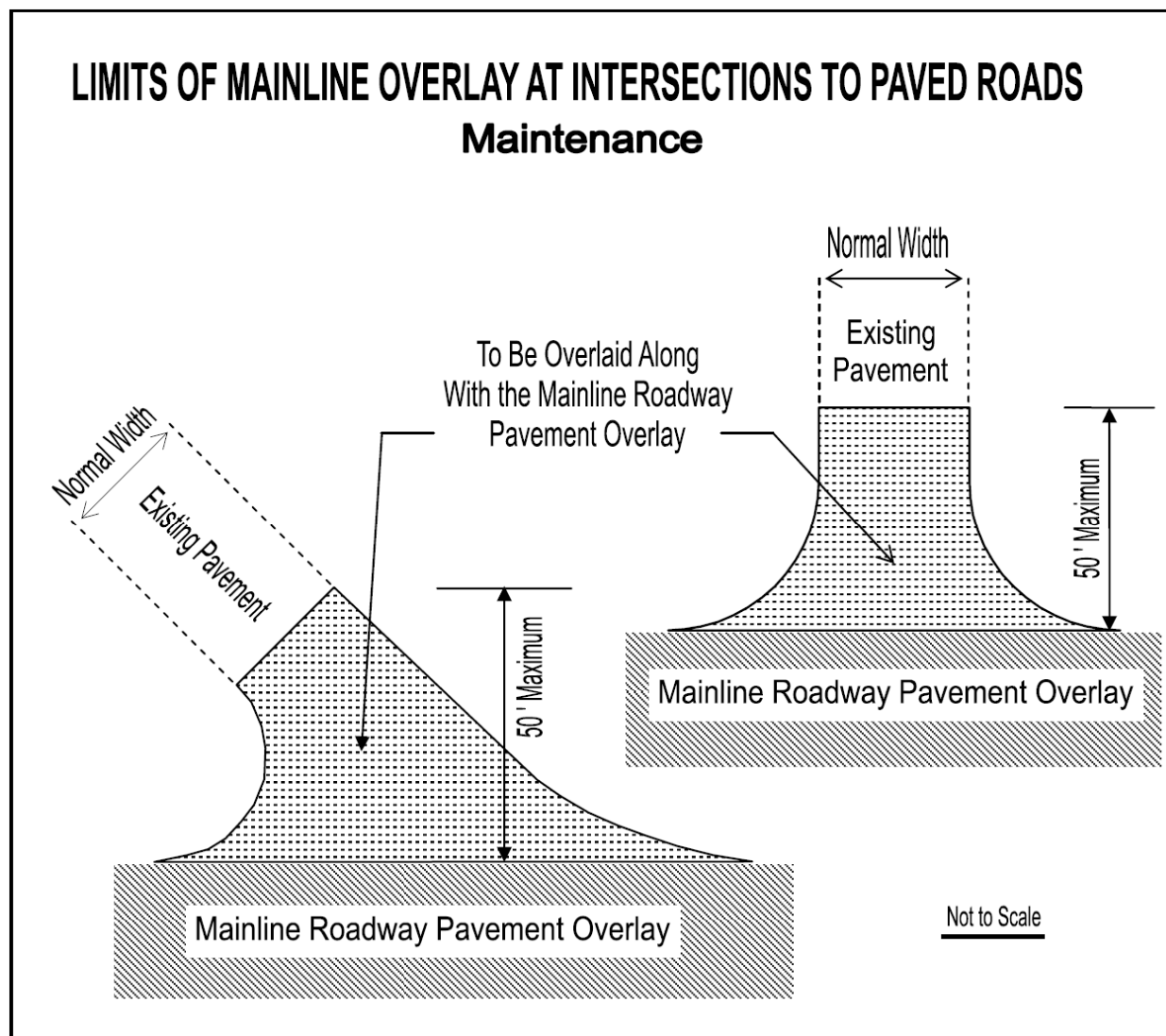
Asphalt overlay pavement placed on existing paved roadway surfaces that intersects the mainline roadway pavement overlay shall be constructed using a method approved by the Engineer, which shall include the cutting of a notch into the pavement. The approved method shall provide a smooth transition between new pavement and existing pavement. Such tie-ins shall conform to the

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

requirements of Section 315.05(c) of the Specifications except that all joints at tie-in locations shall be tested using a 10-foot straightedge in accordance with the requirements of Section 315.07(a) of the Specifications. The variation from the testing edge of the straightedge between any two contact points with the pavement surface shall not exceed 1/4 inch.

V. MEASUREMENT AND PAYMENT

Overlay at intersections to paved roads will be measured and paid for in accordance with the pay items of Section 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 317 of the Specifications, and the Special Provision for Planing Asphalt Concrete Pavement (Asphalt Maintenance).



*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES — FOR PROJECTS WHERE RIDEABILITY EVALUATION OF ASPHALT CONCRETE PAVEMENT IS REQUIRED IN WRITING BY THE MATERIALS ENGINEER. THE PROPOSAL MUST CONTAIN THE EXACT LOCATIONS AND LIMITS OF THE RIDEABILITY EVALUATION, INCLUDING INCENTIVE ONLY LOCATIONS. FOR PLANT MIX SCHEDULE PROJECTS THE EXACT LOCATIONS AND LIMITS MUST BE CONTAINED IN SCHEDULE NOTES OR IN A PROJECT SPECIFIC SPN IN THE PROPOSAL. FOR ALL OTHER TYPES OF PROJECTS THE EXACT LOCATIONS AND LIMITS MUST BE INCLUDED IN A PROJECT SPECIFIC SPN IN THE PROPOSAL.

S315R00-1209

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RIDEABILITY**

October 26, 2009

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 315.07 Pavement Tolerances is amended to include the following:

For pavements designated in the Contract, the final ride quality acceptance will be based on the lowest average International Roughness Index (IRI) for each 0.01-mile section produced by a minimum of two test runs, using a South Dakota style road profiling device and reported for each travel lane. The device shall measure both wheelpaths with laser height sensing instruments. The Department will conduct the testing within 30 calendar days of completion of the final surface course and pavement striping over the designated section. Testing will be conducted in accordance to VTM – 106. The Department will conduct the testing as soon as possible after completion, providing the Contractor can arrange unimpeded access to the paved surface for constant highway speed test runs.

Acceptance

An IRI number in inches per mile will be established for each 0.01-mile section for each designated lane. The last 0.01-mile (52 feet) section before a bridge, the first 0.01-mile (52 feet) section after a bridge, and the beginning and end 0.01-mile (52 feet) sections of the final surface will not be subject to a pay adjustment.

Areas excluded from testing by the road profiling device will be tested using a 10-foot straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than 1/4 inch. Humps and depressions exceeding the specified tolerance shall be subject to correction as directed by the Engineer, at no additional cost to the Department.

The following tables provide the acceptance quality of pavement based on the finished rideability for interstate and non-interstate roadways.

TABLE A - INTERSTATE SYSTEM	
IRI After Completion (Inches Per Mile)	Pay Adjustment (Percent Pavement Unit Price)
45.0 and Under	115
45.1-55.0	110
55.1-70.0	100
70.1-80.0	90
80.1-90.0	80

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

90.1-100.0	70
100.1-120.0	60 or Subject To Corrective Action
120.1-140.0	40 or Subject to Corrective Action
140.1-160.0	20 or Subject to Correction Action
Over 160.1	0 or Subject to Corrective Action

TABLE B - NON- INTERSTATE SYSTEM	
IRI After Completion (Inches Per Mile)	Pay Adjustment (Percent Pavement Unit Price)
55.0 and Under	115
55.1-65.0	110
65.1-80.0	100
80.1-90.0	90
90.1-100.0	80
100.1-110.0	70
110.1-130.0	60 or Subject To Corrective Action
130.1-150.0	40 or Subject to Corrective Action
150.1-170.0	20 or Subject to Corrective Action
Over 170.1	0 or Subject to Corrective Action

When the Engineer requires corrections to the pavement surface, the method of correction shall be reviewed by the Engineer and correction shall be performed at the Contractor's expense. The Engineer may require correction of any or all adjoining traffic lanes or shoulders at the Contractor's expense to assure uniform cross section. Methods of correction may include, but are not limited to diamond grinding, remove and replace, and asphalt concrete (AC) overlay.

Where corrections are made after the initial Department rideability test, the pavement will be retested by the Department to verify that corrections have produced the acceptable ride surface. Unit price disincentives or additional corrections may be required based on the retested IRI measurements as determined by the Engineer. No incentives will be provided for sections on which corrective actions have been required by the Engineer. In the event the corrective action(s) do not result in 100 percent payment, then the Contractor will be assessed the corresponding percent payment.

Single-Lift Construction

An AC layer is defined as a material lift equal to or greater than 2.5 times the maximum nominal aggregate size for the AC mix(es) specified in the Contract. A material lift less than the specified application rate or less than 2.5 times the maximum nominal aggregate size for the AC mix(es) specified in the Contract is considered a "scratch course" and not an AC layer.

Where only one AC layer shall be placed, the Department will test pavement sites subject to this special provision prior to work by the Contractor. Upon request by the Contractor, the Engineer will provide the IRI testing results. If this IRI testing is conducted more than 180 calendar days prior to the scheduled beginning of the work, the Engineer or Contractor may request new IRI testing.

Based on the average IRI (original surface and completed overlay) for each 0.1-mile length of each travel lane subject to this special provision, no corrective action will be required if the completed surface has IRI test results which indicate a 30 percent or more improvement in the ride quality. This percent improvement is based on the 0.1-mile paved section average IRI and

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

not the individual 0.01-mile increments. When the percent improvement is achieved for a 0.1-mile section, the payments (incentives, disincentives and full payment) for the individual 0.01-mile increments will be summed. The Contractor will then be paid the greater of the total adjusted payments or 100 percent for that 0.1-mile section.

This rideability specification does not relieve the Contractor from responsibility concerning workmanship in accordance with the requirements of the Specifications, other contract requirements or as defined by the Engineer.

Incentive Only Projects

For projects designated as "incentive only", the Contractor will not be subjected to penalties on any 0.01-mile section resulting from the final rideability results. Incentive only projects will not be subject to corrective action as a result of the rideability results.

Pay adjustments will be applied to the theoretical tonnage of the surface mix asphalt material for the lane width and section length tested.

This rideability specification does not relieve the Contractor from responsibility concerning workmanship in accordance with the requirements of the Specifications, other contract requirements or as defined by the Engineer.

Payment

Pay adjustments will be applied to the theoretical tonnage of the surface mix asphalt material for the lane width and section length tested (generally 12 feet wide and 52.8 feet long) based on testing prior to any corrective action directed by the Engineer. For the section(s) where corrective action is required, pay adjustment will be based on the testing after the corrective action has been accomplished.

GUIDELINES — PROJECTS WHERE RIDEABILITY EVALUATION OF HYDRAULIC CEMENT CONCRETE PAVEMENT IS REQUIRED IN WRITING BY THE MATERIALS ENGINEER (A PROJECT-SPECIFIC SPCN STATING THE EXACT LOCATIONS AND LIMITS OF THE RIDEABILITY EVALUATION MUST BE INCLUDED IN THE CONTRACT).

S316B00-0708

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RIDEABILITY FOR HYDRAULIC CEMENT CONCRETE PAVEMENT**

August 13, 2002ccc
Reissued July 2008c

SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT of the Specifications is amended as follows:

For pavements designated for rideability testing Section 316.04(k) Surface Test is amended to include the following:

Pavement smoothness will be determined by a profiler on designated lanes having a design speed of 45 miles per hour or higher as specified herein. Intersections, transition lanes, and pavement within 52 feet of bridge approach slabs or manholes will be tested by a straightedge.

Except as noted hereinbefore, the surface ride quality acceptance will be based on the lowest average International Roughness Index (IRI) for each 0.01-mile section produced by a minimum of two test runs, using a South Dakota type road profiling device and reported for each travel lane. The device shall measure both wheelpaths with laser height sensing instruments. The Department shall conduct the testing as soon as practical and prior to opening to public traffic, providing the Contractor can allow unimpeded access to the paved surface for constant highway speed test runs. Testing shall be conducted in accordance with the requirements of VTM – 106.

Acceptance

An IRI number in inches per mile will be established for each 0.01-mile section for each travel lane of the surface. The 0.01-mile section before and after a bridge, and the beginning and end 0.01-mile sections of the surface will not be subject to a pay adjustment.

Areas excluded from testing by the profiler will be tested using a 10-foot straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than 1/4 inch. Humps and depressions exceeding the specified tolerance shall be subject to correction as directed by the Engineer, at no additional cost to the Department.

The following table provides the acceptance quality rating scale of pavement based on the final rideability determination. The pay incentive/disincentive schedule will be applied to the final surface area. The surface area, in square yards, shall be calculated based on the tested section length and lane width as shown on the plans.

IRI After Completion [Inches Per Mile]	Contract Unit Price Adjustment [Percent of Pavement Unit Price]
45.0 and Under	105
45.1-55.0	103
55.1-70.0	100
70.1-80.0	90
80.1-90.0	80

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

90.1-100.0
Over 100.0

70
Subject To Corrective Action

This contract unit price adjustment will apply to the hydraulic cement concrete's unit price for the total area of the 0.01-mile section for the lane width.

When corrections to the pavement surface are required, the Contractor's method of correction shall be submitted for approval by the Engineer. In order to produce a uniform cross section, the Engineer may require correction to the adjoining traffic lanes or shoulders. Corrections to the pavement surface and/or the adjoining traffic lanes and shoulders will be at no cost to the Department.

Where corrections are made after the official Department test, the pavement will be retested by the Department to verify that corrections have produced the acceptable ride surface. No incentives will be provided for sections on which corrective actions have been required. The Contractor will have one opportunity to perform corrective action(s). In the event the corrective action(s) do not result in a minimum of 70 percent payment, the Contractor will be assessed the corresponding percent payment based on the following table:

IRI After Correction [Inches Per Mile]	Contract Unit Price Adjustment [Percent of Pavement Unit Price]
100.1 – 120.0	60
120.1 – 140.0	40
140.1 – 160.0	20
Over 160.0	0

Corrective work shall be completed prior to determining pavement thickness.

GUIDELINES — PROJECTS REQUIRING SEALED SHOULDER JOINTS**S316D00-0708****VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SEALING SHOULDER JOINTS**August 1, 1991cc
Reissued July 2008c**I. DESCRIPTION**

This work shall consist of cutting a groove between pavement and shoulder surfaces in accordance with the requirements of this provision, at locations shown on the plans or as directed by the Engineer.

II. MATERIALS

Hot-poured joint sealer shall conform to the requirements of Section 212 of the Specifications.

III. PROCEDURES

The Contractor shall construct a continuous groove by saw cutting or routing the asphalt shoulder material along the joint formed by the shoulder asphalt material and the edge of the contract paved surface. The size of the groove after cutting and cleaning shall be at least 5/8-inch wide 5/8-inch deep having vertical sides. The depth measurement shall be made from the surface of the shoulder or pavement, whichever is lower. After cutting operations are completed, debris shall be promptly removed from the pavement and shoulder surfaces.

Prior to filling the groove with joint sealer, the groove shall be cleaned of all loose materials by compressed air. The groove shall be free of dirt, dust, water, oil, grease and other materials which would prevent bonding of the joint sealer to the pavement surfaces.

At the time of placement of the sealer, the groove shall be dry and the ambient air temperature shall be at least 45 degrees F. The groove shall be filled level with the hot pour joint sealer by means of a sealing device which will not cause air to be entrapped in the groove.

V. MEASUREMENT AND PAYMENT

Sealing shoulder joints will be measured in linear feet, complete-in-place, and will be paid for at the contract unit price per linear foot. This price shall include groove cutting, debris removal, groove cleaning and furnishing and placement of the hot-poured sealer.

Payment will be made under:

Pay Item	Pay Unit
Sealing Shoulder Joints	Linear Foot

——**SELECT USE 300 SERIES SPs (SPECIAL PROVISIONS)**——

The following are Select Use Special Provisions. None have been through the Department's complete Specifications Committee review/comment/acceptance process and are not part of the Standard Specifications. They are to be considered as project-specific and may be subject to modifications required to meet specific project conditions or requirements for Federal funding. Anyone making modifications is responsible for obtaining the appropriate expertise in the discipline applicable to the modification. If modifications are made the date must also be changed to reflect the current date. Please send a copy of the modified special provision with the new date and specific project number to David.Gayle@VDOT.Virginia.gov so it may be added to the Specifications Stockpile.

SU305000A Mod Aggr Shldr Matl (Loudoun Co)**GUIDELINES – MODIFIED AGGREGATE SHOULDER MATERIAL (LOUDOUN COUNTY ONLY).**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
MODIFIED AGGREGATE SHOULDER MATERIAL
(Northern Virginia District – Loudoun County Only)

October 2, 2008a

I. DESCRIPTION

This work shall consist of furnishing and placing aggregate shoulder material in accordance with the requirements herein and as directed by the Engineer. Shoulder material shall consist of aggregate No. 21A mixed with topsoil for the purpose of establishing a vegetative cover on the roadway shoulder.

II. MATERIALS

Aggregate No. 21A material shall conform to the requirements of Section 208 of the Specifications. Class B topsoil material shall conform to the requirements of Section 244 of the Specifications.

III. PROCEDURES

Modified aggregate shoulder material shall consist of 80 percent aggregate No. 21A and 20 percent Class B topsoil by weight. Modified aggregate shoulder material shall be mixed in a central mixing plant or pugmill. The Contractor shall furnish a certified weigh ticket in accordance with the requirements of Section 109.01 of the Specifications upon delivery of the material. Subbase and shoulder material shall be placed in accordance with the requirements of Section 305.03(e) of the Specifications. The material shall be well compacted for stability, however, the density requirements are waived.

IV. MEASUREMENT AND PAYMENT

Modified aggregate shoulder material will be measured in tons in accordance with the requirements of Section 109.01 of the Specifications and paid for at the contract unit price per ton. The price bid for such work shall be full compensation for furnishing aggregate and Class B topsoil, mixing, placing and for all labor, tools and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Modified Aggregate Shoulder Material	Ton

SU315000A Seal Crack ACP-HCCP-Bef Ovrly**GUIDELINES – FOR MAINTENANCE PROJECTS (OVERLAY).**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**SEALING CRACKS IN ASPHALT CONCRETE PAVEMENTS OR
HYDRAULIC CEMENT CONCRETE PAVEMENT (PRIOR TO OVERLAY)**
(Type A or B)

May 8, 2009ac

I. DESCRIPTION

This Specification covers the cleaning and sealing of cracks with Type A material for pavements which will not be overlaid with hot mix asphalt within one year. Type B material shall be used to fill cracks in asphalt pavement or hydraulic cement pavement joints or cracks that will be overlaid within one year. The Engineer will designate which sites are to use each material.

In addition, this Specification covers the cleaning and sealing of cracks in existing asphalt concrete pavements including, but not limited to, cracks along the longitudinal joint(s) between lanes. Cracks ranging in width from 1/8 inch to 1 ½ inches shall be sealed. Areas exhibiting severe map or alligator cracking and/or requiring major patching, or cracks that exceed 1 ½ inches are not included in this contract.

The Department reserves the right to extend the contract for one additional year at the same unit prices, terms and conditions if mutually agreeable.

II. MATERIALS

All sealant materials shall be certified or tested and approved by the Engineer before being incorporated into the work. The Contractor shall furnish a complete written statement of the origin, composition and manufacture of all materials that are to be used in the work. Where installation procedures or any part thereof are required to be in accordance with recommendations of the manufacturer of sealant compounds, the Contractor shall submit catalogue data and copies of recommendations to the Engineer prior to installation of the materials. All such recommendations shall be adhered to unless directed otherwise by the Engineer.

TYPE A

The crack sealant shall be of the following type and shall meet all the requirements of ASTM D-3405 and exceed all requirements of ASTM D-1190, AASHTO M-173 and Federal Specification SS-S-164:

A HOT-POURED MODIFIED ASPHALT RUBBER WITH GRANULATED CRUMB RUBBER AND LATEX PLASTICIZERS. The proportions of the materials, by weight, shall be up to 80 percent maximum asphalt and up to 25 percent maximum crumb rubber.

The crumb rubber shall be 100 percent vulcanized rubber and meet the following gradation requirement:

Sieve	Percent Passing
No. 10	100%
No. 40	0-40%

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

TYPE B

Type B material shall consist of PG 70-22 and polyester fibers from the Materials Division Manual of Instructions approved list of Stabilizers for Asphalt Mixtures (fibers only) at 5 percent by weight.

TYPE A OR B

The sealant shall be free of foreign matter and free of lumps when melted or applied. Additives to prevent tracking shall be employed if required and the sealant shall have a no pickup time of 10 minutes at 77 degrees F.

III. EQUIPMENT

Proper sealing equipment must be used for the specific material listed in accordance with the manufacturer's recommendations. The equipment for hot applied sealant compounds shall be a melting kettle of double boiler, indirect heating type, using oil as a heat-transfer medium. The kettle shall have an effective mechanically operated agitator, a re-circulation pump and shall be equipped with a positive thermostatic temperature control which shall be checked for calibration before beginning work. The unit shall be capable of maintaining the specified mixing temperature within 10 degrees F. Manufacturer's recommendations for mixing and application temperatures shall be followed with the latter being measured at the nozzle of the applicator wand. Overheating or direct heating of the sealant material shall not be permitted. The hoses, connectors and applicator wand shall all be insulated.

IV. CONSTRUCTION

The sealant shall not be placed when the ambient or pavement temperatures fall below 45 degrees F., or when moisture is present in the crack to be sealed.

Prior to sealing, cracks shall be thoroughly cleaned as approved by the Engineer using an oil free hot air blasting heat lance capable of a velocity of 3000 fps at 3000 degrees F. Cracks shall be cleaned such that all dirt, debris, moisture and other foreign materials that will prevent bonding of the sealant are removed to a minimum depth of 1 inch. All dirt and debris shall be removed from the pavement to prevent re-contamination of the crack. Cracks shall be completely dry before sealing. Any crack not meeting the approval of the Engineer shall be re-cleaned and dried.

The sealant shall be pumped directly into the crack from the heater-melter unit at the temperature specified by the manufacturer **immediately following the cleaning of each crack**. Cracks shall be sealed in the following manner as approved by the Engineer:

Cracks shall be filled from the bottom up in a continuous manner such that the crack is completely filled level with the pavement surface, and the sealant shall overlay the crack at the pavement surface leaving a maximum "over-banded" appearance of 1 inch wide on each side of the crack. The material shall not continue to flow beyond these limits once a crack is sealed. The height of the sealant above the pavement surface shall not exceed 1/8 inch. For this method of sealing, the applicator wand shall be equipped with a shoe that will produce the extruded over-band as well as completely fill the crack.

The applicator wand shall be returned to the mixing unit and the sealant material re-circulated immediately upon completion of each crack sealing.

Sealant that has been overheated, subjected to heating for more than 4 hours or any amount of sealant that remains in the applicator at the end of the day's operation shall be withdrawn and

wasted. Prior to the start of each day's operation, the Contractor shall withdraw approximately one gallon of sealant from the applicator to be considered as waste material.

Any crack, which cannot be filled due to the sealant draining into a large void, shall be plugged with sand, No. 10 aggregate or other suitable material, e.g., backer rod, approved by the Engineer, and then filled. After being plugged, recleaning of the crack may be required prior to filling with sealant.

Traffic shall be kept off the pavement surface until the crack sealant has cured to the point it will not track or be distorted by traffic.

The Contractor shall replace, at his or her expense, any sealant that pulls out within 96 hours after opening the pavement to traffic.

V. METHOD OF MEASUREMENT

Sealant for cracks or joints will be measured by the pound. At the beginning of each workday, the Engineer, or his or her appointed representative, shall measure the amount of material in the heater-melter unit and log all additional material added during the day, and measure the amount of material remaining in the heater-melter to determine the total poundage used for that day. No payment will be made for waste material.

For the purpose of converting the liquid material in the heater-melter unit from gallons to pounds, the Contractor shall use a calibrated measuring rod to determine the actual quantity of material in gallons, and same shall be converted to pounds taking into consideration the temperature of the material at the time of measurement. A chart or other approved conversion method furnished by the sealant material manufacturer/supplier shall be used to perform the conversion from gallons to pounds.

VI. BASIS OF PAYMENT

Crack Sealant/Filler will be paid for at the contract unit price per pound, which price shall be full compensation for providing the sealant/filler, complete-in-place, including cleaning and sealing the cracks and for all tools, labor, equipment, materials and incidentals related fully completing the installation.

Payment will be made under:

Pay Item	Pay Unit
Crack Sealant/Filler(Type)	Pound

SU315001A Saw-Seal Conc Joint Pav-Asp Ovrly**GUIDELINES – FOR ASPHALT MAINTENANCE PROJECTS (ASPHALT OVERLAYS ONLY):**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**SAWING AND SEALING JOINTS IN ASPHALT OVERLAYS
OVER JOINTED CONCRETE PAVEMENTS**

October 31, 2008a

I. DESCRIPTION

This work shall consist of saw cutting, cleaning and sealing transverse joints in asphalt overlays and shoulders. Asphalt overlay joints shall be constructed over, and in line with, the existing underlying transverse concrete pavement joints in accordance with the provisions herein, and as directed by the Engineer.

II. MATERIALS

- A. **Joint Sealant:** The sealant shall meet the requirements of ASTM D 3405. The sealant shall be accepted on the manufacturer's certification that the material supplied to the project conforms to the requirements of ASTM D 3405. The Department reserves the right to sample and test the joint sealer. The joint sealant compound shall be packaged in sealed containers. Each container shall be clearly marked with the name of the manufacturer, the trade name of the sealant, the manufacturer's batch and lot number, the pouring temperature, and the safe heating temperature.
- B. **Bond Breaker Tape:** Bond breaker tape shall consist of regular masking tape or a suitable bond breaker tape designed for use with hot poured sealants. The width of the tape may be equal to but not more than 1/8 inch narrower than the 1/2 inch wide reservoir.

III. PROCEDURES

- A. **General:** The contractor shall conduct his operation so that sawcutting of transverse joints, cleaning, and sealing is a continuous operation. Traffic shall not be allowed to knead together or damage the sawed joints. Sawed joints should be filled and cured prior to opening to traffic. Sawcutting, cleaning and sealing shall be done within seven days after placement of the top course of asphalt overlay.
- B. **Location of Sawed Joints:** It shall be the Contractor's responsibility to reference the location of the existing joints in the concrete pavement prior to placing the asphalt overlay. All joints shall be referenced by methods approved by the Engineer so that sawcuts can be made in the asphalt overlay directly over the existing joints. Sawcuts which are determined to be out of alignment with underlying joints shall be resawed at the correct location at no additional expense to the Department. Arbitrarily measuring the distance between sawcuts without appropriate referencing and notes will not be allowed.
- C. **Sawcutting of Transverse Joints:** The Contractor shall sawcut transverse joints to the dimensions prescribed in the attached drawing. The sawcut joints shall be directly over the existing concrete pavement joints and shall be accurately located by reference pins and stringline. Tolerance of ± 1 inch will be allowed. Details for locating the sawcuts shall be approved by the Engineer. The blade or blades shall be of such size and configuration that the desired dimensions of the sawcut can be made with one pass. Either dry or wet cutting will be allowed. No spacers between blades will be allowed. All sawcuts shall produce neat, smooth vertical faces. The transverse sawcut joints shall extend the full width of the underlying concrete pavement and shall extend through any adjacent asphalt. Existing transverse joints that are

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

A stylized logo for the year 2007, with the numbers in a blue and yellow gradient, outlined in blue.

offset at the longitudinal joint by more than 1 inch, measured between the centers of the joint cavities, shall require separate sawcuts terminating at the longitudinal joints.

- D. **Cleaning:** Dry sawed joints shall be thoroughly cleaned with a minimum stream of air of 100 pounds per square inch (psi) to remove any dirt, dust or deleterious matter adhering to the joint walls or remaining in the joint cavity. Wet sawed joints shall be thoroughly cleaned with a minimum 50 psi water blast immediately after sawing to remove any sawing slurry, dirt, or deleterious matter adhering to the joint walls or remaining in the joint cavity. Wet sawed joints shall be blown with air to provide dry joint surfaces prior to sealing. All sawing slurry from the wet sawing process shall be immediately flushed from the pavement surface. Dry dust and material from the dry sawing process shall be blown or brushed off the pavement surface. The Contractor shall be required to provide protective screening, subject to the approval of the Engineer, if his cleaning operations are capable of causing damage to or interfering with traffic in adjacent lanes.
- E. **Sealing:** The joint sealant material shall be heated in a kettle or melter constructed as a double boiler, with the space between the inner and outer shells filled with oil or other heat transfer medium. The equipment shall include positive temperature control, mechanical agitation, recirculation pumps and thermometers for continuous reading of the temperature of both the sealing compound and the heat transfer medium. The applicator wand shall be heated or insulated to maintain the pouring temperature of the sealant during placing operation. The first gallon of heated material is to be considered spoil and shall be discarded into a container so designated. Pour pots or similar devices shall not be used to fill sawed joints. A copy of the manufacturer's recommendations pertaining to the heating and application of the joint seal material shall be submitted to the Engineer prior to the commencement of work. These recommendations shall be adhered to and followed by the Contractor. The temperature of the sealant material in the field application equipment shall never exceed the safe heating temperature recommended by the manufacturer. Any given quantity of material shall never be heated at the pouring temperature for more than six hours and shall never be reheated. After cleaning, and just prior to sealing, a bond breaker tape shall be placed in the bottom of the sawcut joint. The joints shall be sealed when the sealant materials is at the pouring temperature recommended by the manufacturer. The sealant shall fill the joint such that after cooling, the level of the sealer will not be greater than 1/8 inch below the pavement or shoulder surface. Care shall be taken in the sealing of the joints so that the joints are not overfilled and the final appearance will present a neat fine line. The applicator wand shall be returned to the machine and the joint sealant material recirculated immediately upon completion of each joint sealing. Sand shall not be spread on the sealed joints to allow early opening to traffic. Sealant shall be tack free prior to opening to traffic.

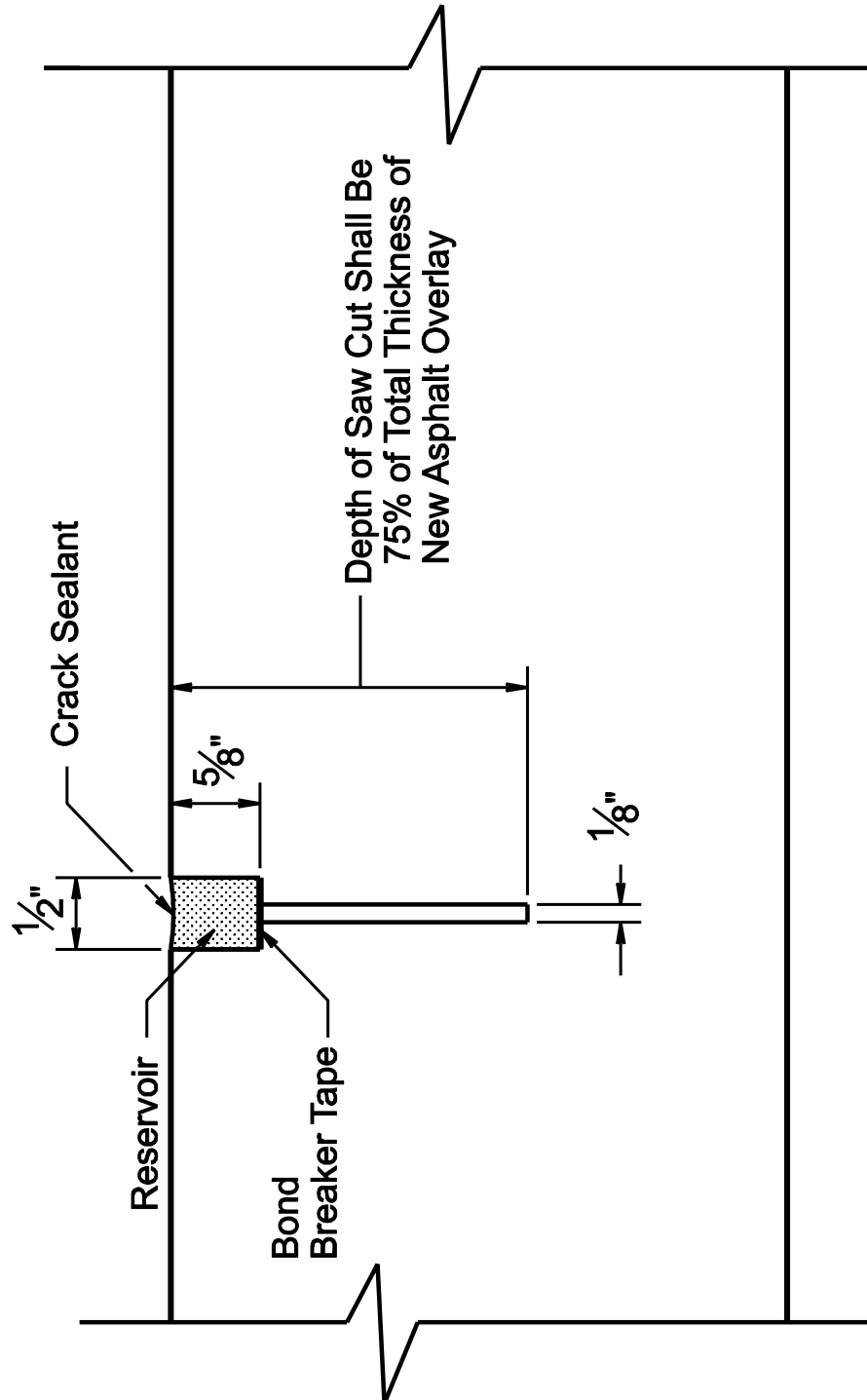
IV. MEASUREMENT AND PAYMENT

Sawing and sealing asphalt transverse joints will be measured and paid for in linear feet of sawed and sealed transverse joints completed and accepted. Payment shall be full compensation for referencing concrete pavement transverse joints, marking, sawing, additional sawcutting performed because initial sawcut was determined to be out of alignment with underlying joints, cleaning and sealing the joints and furnishing all labor, materials and cleanup necessary to complete the work.

Pay Item	Pay Unit
Sawing and sealing asphalt transverse joints	Linear foot

SAW and SEAL

Typical Saw Cut Dimensions



*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

——STANDARD 300 SERIES SSs (SUPPLEMENTAL SPECIFICATIONS)——

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

GUIDELINES — FOR PROJECTS REQUIRING DRAINAGE STRUCTURES. BEGIN USE WITH THE JULY 2010 ADVERTISEMENT.

SS30201-0710

November 16, 2009

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 302—DRAINAGE STRUCTURES****SECTION 302—DRAINAGE STRUCTURES** of the Specifications is amended as follows:**Section 302.03(b) Precast Drainage Structures** is amended to replace the second paragraph with the following:

Requests for approval of a precast design shall include detailed plans and supporting computations that have been reviewed by a registered Professional Engineer having at least 5 years experience in structural design of precast structures or components proposed and licensed in the Commonwealth. Unless otherwise specified, concrete exposed to freeze/thaw environments shall conform to Section 217.02 of the Specifications and shall have a design strength at 28 days of at least 4,000 pounds per square inch and an air content of 6 ± 2 percent. Concrete not exposed to freeze/thaw environments shall be exempt from the requirements of Section 217.02(a) of the Specifications. The design of the concrete mixture and the method of casting, curing handling and erecting of precast units shall be subject to review by the Engineer. Precast units may be shipped after reaching 85 percent of the design strength as determined by control cylinders. Sampling and testing concrete strength shall be performed using control cylinders in accordance with ASTM C31 and C39 at a rate of one set of cylinders per lot. A lot is defined as a maximum 250 cubic yards or a single weeks production (whichever quantity is less) of precast concrete from each batching operation, being of like material, strength and manufactured by the same process. Variations of lot definition will be governed by applicable specifications and approved by the Engineer. Control cylinders used for acceptance testing shall be cured under the same conditions as the concrete the cylinders represent. Units shall retain their structural integrity during shipment and shall be subject to inspection at the job site. Approval to use precast units shall not be construed as waiving the size and weight limitations specified in Section 107.21 of the Specifications.

Section 302.03 Procedures is amended to add the following**(d) Post Installation Inspection**

In addition to the visual inspection performed by the Department during the initial installation of storm sewer pipes and pipe culverts, a post installation visual/video camera inspection shall be conducted by the Contractor in accordance with the requirements of this specification and VTM 123 on all pipes identified on the plans as storm sewer pipe and a selected number of pipe culverts. For the purposes of this Section all pipe installations not identified on the plans as storm sewer pipe are considered pipe culverts. Post installation Inspections shall be performed on straight line and radial installations.

For pipe culverts, a minimum of one pipe installation for each size of each material type utilized on the project will be randomly selected by the Engineer for inspection, however, in no case will the amount of pipe subject to inspection be less than ten percent of the total contract amount for the size and material type indicated. Where possible, for all

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

installations in which the pipe or culvert's size, orientation, or location permit deflection to be easily visually identified, (as verified with the Engineer) the Contractor may perform visual inspections in lieu of video inspections. If defects as described herein are noted during the inspection, the Engineer may require additional pipe installations of that size and/or material be inspected. The Contractor shall coordinate and schedule all post installation inspections so that these are made in the presence of the Engineer. The post installation inspection shall be performed no sooner than 30 days after completion of the pipe installation and placement of final cover (except for pavement structure). The Contractor shall issue a report detailing all issues or deficiencies noted during the inspection (including a remediation plan for each deficiency noted where applicable) no later than 5 days after completion of the inspection.

While the intent of this requirement is to perform the post installation inspection prior to paving, project scheduling may dictate that a particular site be paved before the end of the 30 day period. In such cases, a preliminary inspection of the pipe shall be made, prior to paving over it, to insure that the pipe has been properly installed and is performing well. Performing such a preliminary inspection prior to paving will not relieve the Contractor from the requirement to perform the post installation inspection after the 30 day period.

The Contractor's inspection report shall identify and address any of the following items observed during the post installation inspection including identifying any proposed remediation measures the Contractor plans to perform where applicable. Remediation measures may consist of repairing or replacing the defective pipe section(s) or a combination of the two where differing conditions exist within the same run of pipe. Where permitted as an option, remediation methods for the various installation defects shall be proposed by the Contractor, reviewed with the Engineer and must have the Engineer's approval prior to implementation of the corrective action. Remediation shall be the sole responsibility of the Contractor. Further, if remediation measures are shown to be necessary, any time associated with such measures shall be reflected in the impact to the Contractor's progress schedule (may take the form of a time impact analysis, where required by the scheduling requirements) and will not relieve the Contractor of his responsibilities to finish the work required by the contract within the contract time limits or form the basis for any claim of delay where such remediation measures are determined to be a result of the Contractor's fault, omission or negligence.

Upon completion of any corrective remedial measures, the corrected installations are to be re-inspected prior to final acceptance of the project utilizing the test methods identified in VTM 123.

The following criteria shall form the basis for inspections for the respective pipe or culvert types listed:

1. **Concrete Pipe\Culverts:**

- a. **Misalignment:** Vertical and horizontal alignment of the pipe culvert or storm drain pipe barrel shall be checked by sighting along the crown, invert and sides of the pipe, and by checking for sagging, faulting and invert heaving. For the purposes of this provision faulting is defined as differential settlement between joints of the pipe, creating a non-uniform profile of the pipe. The person assigned by the Contractor to perform the inspection should take into account pipe or culvert laid with a designed camber or grade change in accordance with project or site requirements. Horizontal alignment shall be checked for straightness or smooth curvature. Any issues involving incorrect horizontal and/or vertical

alignment shall be noted in the inspection report. If any vertical and/or horizontal misalignment problems are visually noted by the Engineer or in the inspection report, a further evaluation shall be conducted by the Engineer to determine the impact of the misalignment on the joints and wall of the pipe to ascertain what corrective actions are needed. All corrective actions determined necessary by the Engineer that are a result of the Contractor's negligence, omission or fault shall be the sole responsibility of the Contractor to remedy.

- b. **Joints:** Leaking joints may be detected during low flows by visual observation of the joints or checking around the ends of pipes or culverts for evidence of piping or seepage.

Differential movement, cracks, spalling, improper gasket placement, movement or settlement of pipe\culvert sections, and leakage shall be noted by the Contractor in the report. Joint separation greater than one inch shall be remediated by the Contractor at his expense to the satisfaction of the Engineer. Evidence of soil migration through the joint will be further evaluated by the Engineer to determine the level of corrective action necessary. All corrective actions determined necessary by the Engineer that are a result of the Contractor's negligence, omission or fault shall be the sole responsibility of the Contractor to remedy.

- c. **Cracks:** Longitudinal cracks with a width less than one hundredth of an inch (0.01) are considered hairline and minor. They shall be noted in the inspection report; however, no remedial action is necessary.

Longitudinal cracks having a width equal to or greater than one hundredth of an inch (0.01) but equal to or less than one tenth of an inch (0.1) and determined by the Engineer to be detrimental to the structure shall be sealed by a method proposed by the pipe\culvert manufacturer and approved by the Engineer. Pipes or culverts having longitudinal cracks with widths greater than one tenth of an inch (0.1) and determined to be beyond the limits of a satisfactory structural repair shall be replaced by the Contractor at his expense to the satisfaction of the Engineer.

Pipes or culverts having displacement across the crack greater than 0.1 inch but less than 0.3 inch shall be remediated. Remediation methods shall be in accordance with recommendations of the pipe or culvert manufacturer, be acceptable to and authorized by the Engineer before implementation and shall be the sole responsibility of the Contractor. Pipes\culverts having displacement across the crack greater than 0.3 inch shall be replaced by the Contractor at his expense to the satisfaction of the Engineer.

Transverse cracks will be evaluated using the same criteria as indicated above for longitudinal cracks.

- d. **Spalls:** Spalling is defined as a localized pop-out of concrete along the wall of the pipe\culvert generally caused by corrosion of the steel reinforcement or at the edges of longitudinal or circumferential cracks. Spalling may be detected by visual examination of the concrete along the edges of the crack. The person conducting the inspection shall check for possible delamination. If delamination is noted or if a hollow sound is produced when the area is tapped with a device such as a hammer, the

pipe\culvert shall be remediated. Remediation methods shall be in accordance with recommendations of the pipe\culvert manufacturer, be acceptable to and authorized by the Engineer before proceeding, and shall be the sole responsibility of the Contractor.

- e. **Slabbing:** Any pipe\culvert experiencing slabbing shall be remediated. Slabbing is a structural failure of the pipe\culvert that results from radial or diagonal tension forces in the pipe\culvert. These failures appear as a separation of the concrete from the reinforcing steel near the crown or invert of the pipe\culvert and may span the entire length of a pipe or culvert section (joint to joint). Remediation methods shall be in accordance with recommendations of the pipe or culvert manufacturer, be acceptable to and authorized by the Engineer before proceeding, and shall be the sole responsibility of the Contractor. Where slabbing is of such magnitude that, in the opinion of the Engineer the integrity or service life of the pipe or culvert is severely compromised, the section(s) of pipe or culvert exhibiting such deficiency shall be replaced at the Contractor's expense to the satisfaction of the Engineer.

2. Thermoplastic Pipe\Culvert:

- a. **Misalignment:** Vertical and horizontal alignment of the pipe culvert or storm drain pipe barrel(s) shall be checked by sighting along the crown, invert and sides of the pipe, and by checking for sagging, faulting and invert heaving. The person assigned by the Contractor to perform the inspection should take into account pipes\culverts laid with a designed camber or grade change. Horizontal alignment shall be checked for straightness or smooth curvature. Any issues with horizontal and/or vertical alignment shall be noted in the inspection report. If any vertical and/or horizontal misalignment problems are noted in the inspection, a further evaluation will be performed by the Engineer to determine the impact of the misalignment on the joints and wall of the pipe\culvert to ascertain what corrective actions are needed. All corrective actions determined necessary by the Engineer that are a result of the Contractor's negligence, omission or fault shall be the sole responsibility of the Contractor to remedy.
- b. **Cracks:** Cracks or splits in the interior wall of the pipe shall be remediated. Remediation methods shall be in accordance with recommendations of the pipe manufacturer, be acceptable to and authorized by the Engineer before proceeding, and shall be the sole responsibility of the Contractor
- c. **Joints:** Pipes\culverts showing evidence of crushing at the joints shall be remediated. Differential movement, improper joint sealing, movement or settlement of pipe\culvert sections, and leakage shall be noted in the inspection report. Joint separation of greater than 1 inch shall be remediated. Evidence of soil migration through the joint will be further investigated by the Engineer to determine the level of remedial action required by the Contractor. Remediation methods shall be in accordance with recommendations of the pipe manufacturer, be acceptable to and authorized by the Engineer before proceeding. All corrective actions determined necessary by the Engineer that are a result of the Contractor's negligence, omission or fault shall be the sole responsibility of the Contractor to remedy.

- d. **Buckling, bulging, and racking:** Flat spots or dents at the crown, sides or flow line of the pipe due to racking shall be noted in the inspection report and will be evaluated by the Engineer. Areas of wall buckling and bulging shall also be noted in the inspection report and evaluated by the Engineer for corrective action if deemed necessary by the Engineer. All corrective actions determined necessary by the Engineer shall be the sole responsibility of the Contractor.
- e. **Deflection:** Any one of several methods may be used to measure deflection of thermoplastic pipe\culvert (laser profiler, mandrel, direct manual measure, etc.) If the initial inspection indicates the pipe\culvert has deflected 7.5 percent or more of its original diameter, and if the original inspection was performed using a video camera, then a mandrel test shall also be performed in accordance with VTM 123. All deflections shall be noted in the inspection report. Deflections of less than 5 percent of the original pipe\culvert's diameter shall not require remediation. Deflection of 5 percent up to 7.4 percent will be evaluated by the Engineer. If the pipe\culvert experiences additional defects along with deflection of 5 percent up to 7.4 percent of the original pipe\culvert's diameter, the pipe\culvert shall be remediated. Remediation methods shall be in accordance with recommendations of the pipe\culvert manufacturer, be acceptable to and authorized by the Engineer before proceeding, and shall be the sole responsibility of the Contractor.

If the pipe\culvert is deflected 7.5 percent or greater of the original diameter, the pipe\culvert shall be replaced by the Contractor at his expense to the satisfaction of the Engineer

In lieu of the options noted above for remediation of deflection in thermoplastic pipe\culvert installations, the Contractor may elect to follow the payment schedule below:

Amount of Deflection	Percent of Payment
0.0 % TO 5.0%	100% of Unit Bid Price
5.1% to 7.5%	75% of Unit Bid Price
Greater than 7.5%	Remove and Replace at Contractor's Expense

Remediation efforts and payment shall apply to the entire section(s) of the deflected pipe or culvert, joint to joint.

3. **Metal Pipe\Culvert:**

- a. **Misalignment:** Vertical and horizontal alignment of the pipe culvert or storm drain pipe barrel shall be checked by sighting along the crown, invert and sides of the pipe\culvert, and by checking for sagging, faulting and invert heaving. The person assigned by the Contractor to perform the inspection should take into account pipe laid with a designed camber or grade change. Horizontal alignment shall be checked for straightness or smooth curvature. Any issues with horizontal and/or vertical alignment shall be noted in the inspection report for evaluation by the Engineer. If any vertical and/or horizontal misalignment problems are noted in the inspection, further evaluation will be conducted by the Engineer to determine the impact of the misalignment on the joints and

wall of the pipe\culvert to ascertain what corrective actions by the Contractor are needed. All corrective actions determined necessary by the Engineer that are a result of the Contractor's negligence, omission or fault shall be the sole responsibility of the Contractor to remedy.

- b. **Buckling, bulging, and racking:** Flat spots or dents at the crown, sides or flow line of the pipe due to racking shall be noted by the Contractor's inspector in the inspection report and will be evaluated by the Engineer for possible remediation by the Contractor. Areas of wall buckling and bulging shall also be noted in the inspection report and evaluated by the Engineer for possible remediation by the Contractor. If the Engineer determines corrective actions are necessary they shall be in accordance with the pipe\culvert manufacturer's recommendations, be acceptable to and authorized by the Engineer prior to implementation and be the sole responsibility of the Contractor.
- c. **Joints: Pipes showing evidence of** crushing at the joints shall be remediated. Differential movement, improper joint sealing, movement or settlement of pipe sections, and leakage shall be noted in the report. Joint separation of greater than 1.0 inch shall be remediated. Evidence of soil migration through the joint will be further investigated by the Engineer to determine the level of remedial action required by the Contractor. All corrective actions determined necessary by the Engineer that are a result of the Contractor's negligence, omission or fault shall be the sole responsibility of the Contractor to remedy.
- d. **Coating:** Areas of the pipe where the original coating has been scratched, scoured or peeled shall be noted in the inspection report and evaluated by the Engineer to determine the need for immediate repair. If repairs are required they shall be performed by and at the expense of the Contractor in accordance with the recommendations of the pipe\culvert coating manufacturer.
- e. **Deflection:** Any one of several methods may be used to measure deflection of metal pipe\culvert (laser profiler, mandrel, direct manual measure, etc.) If the initial inspection indicates the pipe\culvert has deflected 7.5 percent or more of its original diameter, and if the original inspection was performed using a video camera, then a mandrel test shall also be performed in accordance with VTM 123. All deflections shall be noted in the inspection report. Deflections of less than 5 percent of the original pipe\culvert's diameter shall not require remediation. Deflection of 5 percent up to 7.4 percent will be evaluated by the Engineer. If the pipe\culvert experiences additional defects along with deflection of 5 percent up to 7.4 percent of the original pipe\culvert's diameter, the pipe\culvert shall be remediated. Remediation methods shall be in accordance with recommendations of the pipe\culvert manufacturer, be acceptable to and authorized by the Engineer before proceeding, and shall be the sole responsibility of the Contractor.

If the pipe\culvert is deflected 7.5 percent or greater of the original diameter, the pipe shall be replaced by the Contractor at his expense to the satisfaction of the Engineer

In lieu of the options noted above for remediation of metal pipe\CULVERT, the Contractor may elect to follow the payment schedule below:

Amount of Deflection	Percent of Payment
0.0 % TO 5.0%	100% of Unit Bid Price
5.1% to 7.5%	75% of Unit Bid Price
Greater than 7.5%	Remove and Replace at Contractors Expense

Remediation efforts and percentage of payment shall apply to the entire section(s) of the deflected pipe or culvert, joint to joint.

Section 302.04 Measurement and Payment is amended to add the following:

Post installation inspection shall be measured and paid for at the contract unit price per linear foot. This price shall include performing visual and video camera inspection(s), preparing and furnishing documentation to include narratives and video media in accordance with the requirements herein and VTM 123.

The cost of the remedial measures (including removal and replacement of the pipe, if necessary) and the re-inspection of the remediated pipe necessitated as a result of the Contractor's negligence, omission or fault shall be the contractual and financial responsibility of the Contractor.

Payment will be made under:

Pay Item	Pay Unit
Post installation inspection	Linear Foot

GUIDELINES — FOR PROJECTS REQUIRING EARTHWORK OR LAND DISTURBANCE ACTIVITIES.

SS30304-0310

January 25, 2010

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 303—EARTHWORK****SECTION 303—EARTHWORK** of the Specifications is amended as follows:**Section 303.02—Materials** is amended to add the following:

- (e) **Seed** shall conform to Section 244.02(c) of the Specifications.

Section 303.03—Erosion and Siltation Control is amended to replace the second paragraph the following:

Erosion and siltation control devices and measures shall be maintained in a functional condition at all times. Temporary and permanent erosion and siltation control measures shall be inspected in accordance with the requirements of Section 107.16(a) of the Specifications. Deficiencies shall be immediately corrected. The Contractor shall make a daily review of the location of silt fences and filter barriers to ensure that they are properly located for effectiveness. Where deficiencies exist, corrections shall be made immediately as approved or directed by the Engineer.

Section 303.03(b) Soil Stabilization is amended to replace the last paragraph with the following:

Areas that cannot be seeded because of seasonal or adverse weather conditions shall be mulched to provide some protection against erosion to the soil surface. Mulch shall be applied in accordance with the requirements of Section 603.03(e) of the Specifications and paid for in accordance with the requirements of Section 603.04 of the Specifications. Organic mulch shall be used, and the area then seeded as soon as weather or seasonal conditions permit in accordance with the requirements of Section 603.03 of the Specifications. Organic mulch includes: straw or hay, fiber mulch, wood cellulose, or wood chips conforming to the requirements of Section 244.02(g) of the Specifications.

Section 303.03(f) Sediment Traps and Sediment Basins is replaced with the following:

- (f) **Sediment Traps and Sediment Basins:** Sediment traps shall be utilized where the storm water runoff from disturbed areas is comprised of flow from a total drainage area of less than 3 acres. Sediment basins shall be utilized where the storm water runoff from disturbed areas is comprised of flow from a total drainage area of 3 or more acres. Once a sediment trap or basin is constructed, the dam and all outfall areas shall be stabilized immediately.

Section 303.03—Erosion and Siltation Control is amended to add the following:

- (h) **Temporary Diversion Dike:** This work shall consist of constructing temporary diversion dikes at the locations designated on the plans and in accordance with the plan details and the Specifications, stabilizing with seed and mulch, maintaining, removing when no longer required, and restoration of the area.

Temporary diversion dikes shall be installed as a first step in land-disturbing activities and shall be functional prior to upslope land disturbance. The dike shall be constructed to prevent failure in accordance with Section 303.04 of the Specifications. Seeding and mulch shall be applied to the dike in accordance with Section 603 of the Specifications immediately following

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

its construction. The dikes should be located to minimize damages by construction operations and traffic.

The Contractor shall inspect the temporary diversion dikes after every storm and repairs made to the dike, flow channel, outlet, or sediment trapping facility, as necessary. Once every two weeks, whether a storm event has occurred or not, the measure shall be inspected and repairs made if needed. Damages to the dikes caused by construction traffic or other activity must be repaired before the end of the working day.

Section 303.06(e)—Erosion Control Items is amended to replace “6. **Geotextile fabric**” with the following:

6. **Geotextile fabric** attached to brush barriers or existing fence or used for another function specified on the plans will be measured in square yards, complete-in-place, excluding laps, and will be paid for at the contract unit price per square yard. This price shall include trimming the brush barrier; furnishing, installing, maintaining, and removing the fabric; and dressing and stabilizing the area.

The brush barrier will not be measured for separate payment. The cost thereof shall be included in the price for clearing and grubbing.

Section 303.06(e)—Erosion Control Items is amended to replace “15. **Drop Inlet Silt Trap**” and its corresponding Pay Item and Pay Unit with the following:

15. Inlet protection:

- a. **Inlet Protection Type A** will be measured in units of each and will be paid for at the contract unit price per each location shown or specified. The price shall include furnishing and installing temporary filter barrier including posts and top rails, coarse aggregate and, if required, sediment forebay. This price shall also include maintenance and removal until no longer required. Inlet Protection Type A will be paid for only one time during the duration of the project.
- b. **Inlet Protection Type B** will be measured in units of each and will be paid for at the contract unit price per each location shown or specified. The price shall include furnishing and installing hardware mesh cloth, concrete blocks, wooden studs, coarse aggregate, and maintenance and removal until no longer required. Inlet Protection Type B will be paid for only one time during the duration of the project.
- c. **Inlet Protection Type C** will be measured and paid for in accordance with the individual pay items and pay units shown in the Standard Drawing for EC-6, Type C. The individual pay items for Inlet Protection Type C will be paid for only one time during the duration of the project for each location shown or specified

Payment will be made under:

Pay Item	Pay Unit
Inlet protection Type A	Each
Inlet protection Type B	Each

Section 303.06(e)—Erosion Control Items is amended to add the following:

18. **Temporary diversion dike** will be measured and paid for in units of feet, complete-in-place. This price shall be full compensation for installing the diversion dike, stabilizing with seed and mulch, maintaining, removing when no longer required, and restoration of the area.

Payment will be made under:

Pay Item	Pay Unit
Temporary Diversion Dike	Foot

GUIDELINES — PROJECTS REQUIRING LIME STABILIZATION.

SS30601-0609

October 2, 2008

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 306—LIME STABILIZATION****SECTION 306—LIME STABILIZATION** of the Specifications is amended as follows:**Section 306.01—Description** is replaced with the following:

This work shall consist of stabilizing roadbed material by constructing one or more courses of the pavement structure using a mixture of soil or approved aggregates, lime or lime and fly ash, and water.

Section 306.02(b) Fly Ash is replaced with the following:

- (b) **Fly ash** shall conform to the requirements of Section 241 of the Specifications. Bulk fly ash may be transported dry in bulk trucks and stored in tanks or may be transported in the dampened condition, with a maximum of 15 percent moisture, and stockpiled at the job site. Excessively wet or contaminated surface material shall not be used in mixing operations. Stockpiled material shall be covered with a non-absorptive cover material or periodically moistened to prevent moisture loss and becoming airborne.

Section 306.03—Procedures is amended to replace the opening paragraph with the following:

Lime stabilization will not be permitted when aggregate or the surface on which the course is to be placed is frozen. Manipulation shall not be started until the surface is free from mud and frost and the ambient air temperature is at least 40 degrees F.

Section 306.03(b) Preparing the Materials is replaced with the following:

- (b) **Preparing Materials:** The prepared roadbed shall be scarified to the depth and width required for stabilization. The depth of scarification and the blading operation shall be controlled in such a manner that the surface of the roadbed below the scarified material shall remain undisturbed and shall conform to the established cross section. Prior to the beginning of stabilization work, material retained on the 3-inch sieve shall be removed.

Section 306.03(c) Applying Lime is amended to add following:

When applied in dry form, lime shall be spread uniformly over the top of the scarified material by an approved screw-type spreader box or other approved spreading equipment. The spreading operation shall be shrouded to minimize dust. Dry lime shall not be applied pneumatically, dropped from a dump truck, front end loader or bottom dumped. A motor grader shall not be used to spread the dry lime.

Dry lime shall not be applied when, in the opinion of the Engineer, wind conditions are such that the blowing material would become objectionable to adjacent property owners or create potential hazards to traffic.

Section 306.03(d) Adding Water is replaced with the following:

- (d) **Adding Water:** Sufficient water shall be added by means of pressure water distributors or through the mixing chamber of a rotary mixer to provide moisture content at the time of compaction of not less than the optimum for the mixture no more than optimum +20 percent of optimum.

Section 306.03(e) Mixing is replaced with the following:

- (e) **Mixing:** Lime and water shall be mixed throughout the scarified material as thoroughly as practicable using a self-propelled rotary mixer capable of mixing to a compacted depth of at least 12 inches. Disc harrows or motor graders shall not be used for mixing. The mixture shall then be spread over the roadbed. The surface shall be sealed with a steel wheel or pneumatic tire roller to retard the loss of moisture and then allowed to mellow for 4 to 48 hours. After mellowing, the lime-treated material shall be remixed with a rotary mixer until at least 60 percent of the material, exclusive of aggregates, will pass a No. 4 sieve. Additional water may be added, if necessary, during the remixing operations to ensure proper moisture for compaction.

When a stationary mixer is used, the material may be placed, compacted, and finished immediately after mixing.

When traveling plants are used, additional mixing with blades, tillers, discs, harrows, or repeated passes of the plant may be required.

During the interval of time between lime application and initial mixing, lime that has been exposed to the open air for 6 hours or more, or lime that has been lost because of washing or blowing will not be measured for payment.

Section 306.03(f) Compacting and Finishing is replaced with the following:

- (f) **Compacting and Finishing:** The mixture shall be placed and compacted to a density of at least 95 percent of the maximum density determined in accordance with the requirements of VTM-1 or VTM-12. Light sprinkling may be required during placement operations to maintain the specified moisture content. Compaction shall be accompanied by sufficient blading to eliminate irregularities.

The surface shall be lightly scarified during finishing operations and bladed to eliminate imprints left by the equipment. Final rolling of the completed surface shall be accomplished with a pneumatic tire roller or steel wheel roller. Final compaction and finishing shall be completed within 12 hours after final mixing.

Section 306.03(g) Tolerances is replaced with the following:

- (g) **Tolerances:** The finished stabilized course shall conform to the specified thickness, subject to the following tolerances: Thickness will be determined in accordance with the requirements of VTM-38A. Areas that are deficient in thickness by more than 1 inch shall be removed or reworked with an additional amount of lime equal to 50 percent of the original amount. In the case of stabilized base courses, the Contractor may correct sections deficient in depth by applying asphalt concrete provided such correction is authorized by the Engineer. Areas that are excessive in thickness by more than 2 inches shall be reworked, and an amount of lime equal to 50 percent of the original amount added to the mixture. Any replacement, corrective work and additional lime required to address deficiencies shall be at the Contractor's expense.

Section 306.03(h) Protecting and Curing is replaced with the following:

- (h) **Protecting and Curing:** After finishing of the subgrade, no vehicles except sprinkling equipment shall be permitted on the subgrade for a curing period of 7 days or until the next course is placed, whichever is less. During the curing period, the subgrade shall be lightly sprinkled with water at frequent intervals to prevent the surface from drying and cracking. The Contractor shall plan and execute the work in such a manner as to place the next course during the curing period. If the Contractor has not placed the next course by the end of the curing period, he shall apply liquid asphalt and cover material at the rate specified on the plans.

Damage to the stabilized course attributable to other phases of construction by the Contractor shall be repaired at the Contractor's expense. At least one subsequent course shall be constructed on the stabilized course before hauling operations for the other phases of construction are permitted on the treated course. If the material loses the required stability, density, or finish before the next course is placed or the work accepted, it shall be recompact and refinished at the Contractor's expense.

GUIDELINES — PROJECTS REQUIRING SUPERPAVE ASPHALT CONCRETE PAVEMENT. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21103 SuperPave -Asphalt Concrete.

SS31504-1209

December 3, 2009

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 315—ASPHALT CONCRETE PAVEMENT

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 315.01—Description is amended by adding the following:

At the Contractor's option, Warm Mix Asphalt (WMA) additive or process may be used in lieu of the appropriate Hot Mix Asphalt (HMA).

Section 315.02(d) Liquid asphalt coating (emulsion) for rumble strip is replaced with the following:

- (d) **Liquid asphalt coating (emulsion) for rumble strip** shall conform to the requirements of Section 210 of the Specifications. For centerline rumble strips, CSS-1h or CQS-1h conforming to Section 210 of the Specifications shall be used. The CSS-1h or CQS-1h may be diluted by up to 30 percent at the emulsion manufacture's facility.

Section 315.03(a) Hauling Equipment is replaced with the following:

- (a) **Hauling Equipment:** Trucks used for hauling asphalt mixtures shall have tight, clean, smooth metal or other non-absorptive/inert material bodies equipped with a positive locking metal tailgate. Surfaces in contact with asphalt mixtures shall be given a thin coat of aliphatic hydrocarbon invert emulsion release agent (nonpuddling), a lime solution, or other material on the Department's list of approved release agents. Except where a nonpuddling release agent is used, the beds of dump trucks shall be raised to remove excess agent prior to loading. Only a nonpuddling agent shall be used in truck beds that do not dump. Each truck shall be equipped with a tarpaulin or other cover that will protect the mixture from moisture and foreign matter and prevent the rapid loss of heat during transportation.

Section 315.03—Equipment is amended by adding the following:

- (e) **Material Transfer Vehicle (MTV):** When required in the Contract, a MTV shall be a self-propelled storage unit capable of receiving material from trucks, storing the material and transferring the material from the unit to a paver hopper insert via a conveyor system. The required paver hopper insert and unit shall have a combined minimum storage capacity of 15 tons. Prior to placing the asphalt material on the roadway surface, the storage unit or paver hopper insert must be able to remix the material in order to produce a uniform, non-segregated mix, having a uniform temperature.

Section 315.04—Placement Limitations is replaced with the following:

Asphalt concrete mixtures shall not be placed when weather or surface conditions are such that the material cannot be properly handled, finished, or compacted. The surface upon which asphalt mixtures are to be placed shall be free of standing water, dirt, and mud and the base temperature shall conform to the following:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

(a) **Warm Mix Asphalt (WMA):**

1. **When the base temperature is above 40 degrees F**, laydown will be permitted at any temperature below the maximum limits given in Section 211.08 of the Specifications.
2. **When the laydown temperature is between 301 degrees F and 325 degrees F**, the number of compaction rollers will be the same number as required for 300 degrees F or less.

(b) **Hot Mix Asphalt (HMA):**

1. **When the base temperature is above 80 degrees F**, mixture laydown will be permitted at any temperature conforming to the limits specified in Section 211 of the Specifications.
2. **When the base temperature is between 40 degrees F and 80 degrees F**, the Nomograph, Table III-2, shall be used to determine the minimum laydown temperature of the asphalt concrete mixes. At no time should the minimum base temperature for base (BM) and intermediate (IM) mixes be less than 40 degrees F. At no time should the minimum laydown temperature for base (BM) and intermediate (IM) mixes be less than 250 degrees F.

For surface mixes (SM), at no time should the minimum base and laydown temperatures be less than the following:

PG Binder/Mix Designation	Percentage of Reclaimed Asphalt Pavement (RAP) Added to Mix	Minimum Base Temperature	Minimum Placement Temperature
PG 64-22 (A)	<=20%	40 °F	250 °F
PG 64-22 (A)	>20%	50 °F	270 °F
PG 70-22 (D)	<=30%	50 °F	270 °F
PG 76-22 (E)	<=15%	50 °F	290 °F
PG 64-22 (S)	<=30%	50 °F	290 °F

- (3) **When the laydown temperature is between 301 degrees F and 325 degrees F**, the number of compaction rollers will be the same number as required for 300 degrees F.

Intermediate and base courses that are placed at rates of application that exceed the application rates shown in Table III-2 shall conform to the requirements for the maximum application rate shown for 8-minute and 15-minute compaction rolling as per number of rollers used.

Should the Contractor be unable to complete the compaction rolling within the applicable 8-minute or 15-minute period, the placing of asphalt mixture shall either cease until sufficient rollers are used or other corrective action is taken to complete the compaction rolling within the specified period.

Compaction rolling shall be completed prior to the mat cooling down to 175 degrees F. Finish rolling may be performed at a lower mat temperature.

The final asphalt pavement finish course shall not be placed until construction pavement markings are no longer required.

Section 315.05(b) Conditioning Existing Surface is replaced with the following:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2007

- (b) **Conditioning Existing Surface:** When the surface of the existing pavement or base is irregular, it shall be brought to a uniform grade and cross section as directed by the Engineer. The surface on which the asphalt concrete is to be applied shall be prepared in accordance with the requirements of the applicable specifications and shall be graded and compacted to the required profile and cross section.

When specified, prior to placement of asphalt concrete, longitudinal and transverse joints and cracks shall be sealed by the application of an approved joint sealing compound.

Contact surfaces of curbing, gutters, manholes, and other structures projecting into or abutting the pavement and cold joints of asphalt shall be painted with a thick, uniform coating of asphalt prior to placement of asphalt mixture.

A tack or prime coat of asphalt will be required as specified below and shall conform to the applicable requirements of Section 310 and Section 311 of the Specifications. Asphalt classed as cutbacks or emulsions shall be applied ahead of the paving operations, and the time interval between applying and placing the paving mixture shall be sufficient to ensure a tacky residue providing maximum adhesion of the paving mixture to the base. The mixture shall not be placed on tack or prime coats that have been damaged by traffic or contaminated by foreign material. Traffic shall be excluded from such sections.

1. **Priming and Tacking:**

- a. **Priming aggregate base or subbase:** Unless otherwise specified in the contract documents, priming with asphalt material will not be required on aggregate subbase or base material prior to the placement of asphalt base, intermediate or surface layers.
- b. **Tacking:** Application of tack at joints, adjacent to curbs, gutters, or other appurtenances, shall be applied with a hand wand or with spray bar at the rate of 0.2 gallon per square yard. At joints, the tack applied by the hand wand or a spray bar shall be 2 feet in width with 4 to 6 inches protruding beyond the joint for the first pass. Tack for the adjacent pass shall completely cover the vertical face of the mat edge, so that slight puddling of asphalt occurs at the joint, and extend a minimum of 1 foot into the lane to be paved.

Milled faces that are to remain in place shall be tacked in the same way for the adjacent pass. Use of tack at the vertical faces of longitudinal joints will not be required when paving in echelon.

On rich sections or those that have been repaired by the extensive use of asphalt patching mixtures, the tack coat shall be eliminated when directed by the Engineer.

Tack shall not be required atop asphalt stabilized open-graded material drainage layers.

Tack shall be applied between the existing asphalt surface and each asphalt course placed thereafter.

2. **Removing depressions and elevating curves:** Where irregularities in the existing surface will result in a course more than 3 inches in thickness after compaction, the surface shall be brought to a uniform profile by patching with

asphalt concrete and thoroughly tamping or rolling until it conforms with the surrounding surface. The mixture used shall be the same as that specified for the course to be placed.

When the Contractor elects to conduct operations to eliminate depressions, elevate curves, and place the surface course simultaneously, he shall furnish such additional spreading and compacting equipment as required to maintain the proper interval between the operations.

Section 315.05(c) Placing and Finishing is amended to replace the second paragraph with the following:

A continuous line to mark the edge of pavement and provide proper control of pavement width and horizontal alignment will not be required for this contract.

And to add the following paragraphs:

Prior to application of tack coat and commencement of paving operations the Contractor shall clean the existing pavement surface of all accumulated dust, mud, or other debris that may affect the bond of the new overlay, as determined by the Engineer. The Contractor shall ensure the surface remains clean until commencement and during paving operations. The cost for cleaning and surface preparation shall be included in the bid price for asphalt concrete.

When required in the Contract, a MTV shall be used during the placement of designated asphalt mixes on full lane width applications.

Section 315.05(d) Compacting is amended by replacing the fifth paragraph with the following:

Rolling shall begin at the sides and proceed longitudinally parallel with the center of the pavement, each trip overlapping at least 6 inches, gradually progressing to the crown of the pavement. When abutting a previously placed lane, rolling shall begin at the outside unconfined side and proceed toward the previously placed lane. On superelevated curves, rolling shall begin at the low side and proceed to the high side by overlapping of longitudinal trips parallel with the centerline.

Section 315.05(e) Density—Table III-3 Density Requirements and its footnote are replaced with the following:

**TABLE III-3
Density Requirements**

Mixture Type	Min. Control Strip Density (%)
SM-9.5A, 12.5A	92.5
SM-9.5D, 12.5D	92.2
SM-9.5E, 12.5E	92.2
IM-19.0A, IM-19.0D, IM-19.0E	92.2
BM-25.0A, BM-25.0D	92.2

Note: The control strip density requirement is the percentage of theoretical maximum density of the job-mix formula by Superpave Mix Design or as established by the Engineer based on two or more production maximum theoretical density tests.

Section 315.05(e)2 Surface, Intermediate and Base Courses is replaced with the following:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

2. **Surface, intermediate, and base courses** not having a sufficient quantity of material to run a nuclear density roller pattern and control strip shall be compacted to a minimum density of **91.5** percent of the theoretical maximum density as determined in accordance with the requirements of VTM-22. The Contractor shall be responsible for cutting cores or sawing plugs for testing by the Department. If the density is less than **91.5** percent, payment will be made in accordance with the requirements of Table III-5.

For asphalt patching, the minimum density of 91.5 percent of the maximum theoretical density will be determined in accordance with the requirements of VTM-22. The Contractor shall be responsible for cutting cores or sawing plugs. One set of plugs/cores shall be obtained within the first 20 tons of patching material and every 500 tons thereafter for testing by the Contractor or the Department. Core/plug locations shall be randomly selected. If the density is less than the 91.5 percent, payment will be made on the tonnage within the 20 or 500 ton lot in accordance with the requirements of Table III-5.

TABLE III-5

Payment Schedule for Surface, Intermediate and Base Courses (Not sufficient quantity to perform nuclear density roller pattern and control)

% Theoretical Maximum Density	% of Payment
Greater than or equal to 91.5	100
90.2-91.4	95
88.3-90.1	90
Less than 88.2	75

Any section in which a mixture (e.g., SM-9.0) is being placed at an application rate of less than 125 pounds per square yard, based on 110 pounds per square yard per inch, that does not have a sufficient quantity of material for a nuclear density roller pattern and control strip shall be compacted by rolling a minimum of three passes with a minimum 8-ton roller. No density testing will be required.

Section 315.05(g) Rumble Strips is amended to replace fourth paragraph with the following:

Following the cutting and cleaning of the depressions of waste material, the entire rumble strip area shall be coated with liquid asphalt coating (emulsion) using a pressure distributor. For rumble strips installed on the shoulder, the approximate application rate shall be 0.1 gallons per square yard. For rumble strips installed in a new asphalt concrete surface (new construction or overlay) along the centerline, no sealing of the rumble strip area shall be performed. When the rumble strip is installed along the centerline in an existing asphalt concrete surface (i.e. more than one year since placement), the approximate application rate shall be 0.05 gallons per square yard. The application temperature shall be between 160 degrees F and 180 degrees F. For shoulder rumble strips only, overspray shall not extend more than 2 inches beyond the width of the cut depressions and/or shall not come in contact with pavement markings.

Section 315.08—Measurement and Payment is amended to include the following:

Material Transfer Vehicle (MTV), when required in the Contract, will not be measured for separate payment. The cost for furnishing and operating the MTV shall be included in the price bid for other appropriate items.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

Warm Mix Asphalt (WMA) additive or process will not be measured for separate payment, the cost of which, shall be included in the price bid for other appropriate items.

GUIDELINES — FOR PROJECTS REQUIRING HYDRAULIC CEMENT CONCRETE PAVEMENT

SS31601-0609

February 24, 2009

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT

SECTION 316—HYDRAULIC CEMENT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 316.04(o) Opening to Traffic is replaced with the following:

- (o) **Opening to Traffic:** Pavement shall not be opened to traffic until specimen beams conforming to the requirements of (f) herein have attained a modulus of rupture strength of 600 pounds per square inch when tested by the third point loading method in accordance with the requirements of ASTM C78. The Contractor may use the Maturity Test Method in accordance with ASTM C 1074 to confirm the development of satisfactory strength gain to open to traffic provided the maturity test results are based upon the same concrete mix design as used in the pavement as approved by the Engineer. In the absence of such tests, pavement shall not be opened until 14 days after concrete is placed. Prior to opening to traffic, pavement shall be cleaned, all joints shall be sealed and trimmed and all permanent traffic lines and messages shall be installed.

GUIDELINES — PROJECTS REQUIRING STONE MATRIX ASPHALT CONCRETE PAVEMENT. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21103 SuperPave -Asphalt Concrete, SS31504 SuperPave -Asphalt Conc Pave, SS24803 SMA -Asphalt Concrete.

SS31702-1209

September 21, 2009

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 317—STONE MATRIX ASPHALT CONCRETE PAVEMENT

SECTION 317—STONE MATRIX ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 317.07—Placing and Finishing is amended to replace the first paragraph with the following:

For mixtures containing PG 70-22, the mixture temperature shall not be less than 300 degrees F in the truck and less than 290 degrees F immediately behind the screed. For mixtures containing PG 76-22, the mixture temperature in the truck and immediately behind the screed shall not be less than the minimum compaction temperature provided by the liquid supplier for mixtures.

Section 317.08—Compaction is amended to replace the fifth paragraph with the following:

The Contractor shall perform acceptance testing for density for each day's production by obtaining one sawed specimen, 4 by 4 inch, or a 4-inch diameter core at five stratified random locations specified by the Engineer. The five cores or plugs shall be obtained and the in-place density determined in accordance with the requirements of VTM-22. Core locations shall be numbered sequentially per roadway, marked on the pavement, filled with SMA mixture, and compacted prior to completion of each day of production. The average density of the five cores as determined in accordance with the requirements of VTM-22 shall be 94 to 98 for 100 percent pay. Cores or plugs shall be bulked in the presence of the Department. The Department reserves the right to have the cores or plugs bulked on the project site. The payment for density will be in accordance with the following:

Payment Schedule	
Density Achieved	% of Payment
More than 98.0	97
94.0 to 98.0	100
92.0 to 93.9	85
90.0 to 91.9	65
Less than 90.0	Remove and replace

Section 317.11—Measurement and Payment is amended to replace the second paragraph with the following:

The initial trial section will be paid for at the contract unit price for the mix type specified. Up to one additional trial section of the mix type specified will be paid for at the contract unit price. If additional trial sections are needed, the Department and the Contractor shall negotiate the price based upon a reduced percentage of the contract unit price. No more than four trial sections will be paid by the Department; any additional test sections will be provided solely at the Contractor's expense.

